ZKTB ORIGINAL RESEARCH

Does Childbirth Education Classes Influence Obstetric Outcomes in A Rural Region of Turkey? A Prospective Case-Control Study

Gebe Eğitim Sınıfları Türkiye'nin Kırsal Kesiminde Obstetrik Sonuçları Etkiler mi? Prospektif-Gözlemsel Çalışma

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ABSTRACT

Objective: *Childbirth education classes support women to achieve a pleasing pregnancy and delivery. We aimed to determine the effects of CEC on obstetric outcomes in women who underwent labor induction with dinoprostone in an underdeveloped region of our country in this study.*

Material and Methods: *Prospective study was conducted in Tunceli State Hospital, Department of Obstetrics and Gynecology, between August 2019 and March 2020. Age between 18-40, singleton pregnancy, no presence of chronic disease, and no history of cesarean section was included. CEC was provided by midwives who had certified. It started in the first trimester of pregnancy and continued until the last weeks of pregnancy. All participants received a total of 12 lessons.*

Results: *171 patients recruited, including 82 (48%) of cases continued CEC, and 89 (52%) patients had no admission to CEC (controls). 69.5% of patients delivered vaginally, and we performed a cesarean section in 30.5% of cases in control groups. 83.1% of cases achieved vaginal delivery, and 16.9% underwent cesarean section in the CEC group. The vaginal birth rate was significantly higher in the CEC group than controls (p: 0.03). Neonatal outcomes were similar between the two groups.*

Conclusion: *CEC is an inexpensive option to promote maternal and neonatal health. It can be a useful tool to reduce cesarean birth rates and should be used widely all over the country.*

Keywords: *delivery, education, pregnancy, support*

ÖZET

Amaç: *Gebe eğitim sınıfları memnun edici bir gebelik ve doğum süreci geçirmeleri için gebeleri destekler. Bu çalışmamızda Türkiye'nin az gelişmiş bir bölgesinde dinoprostone ile doğum indüksiyonu uyguladığımız gebelerde gebe eğitim sınıfının gebelik sonuçlarına etkisini araştırdık.*

Gereç ve Yöntemler: *Bu prospektif çalışma Ağustos 2019-Mart 2020 tarihleri arasında Tunceli Devlet Hastanesi, Kadın Hastalıkları ve Doğum kliniğinde yapıldı. 18-40 yaş arası, tekil gebeliği olan, kronik hastalığı bulunmayan ve sezaryen öyküsü olmayan hastalar çalışmaya dahil edildi. Gebe eğitim sınıflarında sertifikalı ebeler görevlendirildi. Eğitimler ilk trimesterde başladı ve gebeliğin son haftalarına dek devam etti. Tüm katılımcılar toplam 12 ders aldı.*

Bulgular: *82 (%48) eğitim sınıfına katılan ve 89 (%52) (kontrol grubu) katılmayan toplam 171 gebe çalışmaya dahil edildi. Kontrol grubunda hastaların %69,5'I vajinal, %30,5'I sezaryen ile doğum yaptı. Gebe eğitim sınıfındaki hastaların %83.1 vajinal doğum yaparken %16,9'u sezaryen ile doğum yaptı ve bu oran istatistiksel olarak anlamlıydı (p: 0,03). Neonatal sonuçlar her iki grupta benzerdi.*

Sonuç: *Gebe eğitim sınıfları maternal ve neonatal sonuçları iyileştirmenin ucuz bir yoludur. Sezaryen oranlarını azaltmada yararlı olabilir ve tüm ülkede yaygın olarak erişilebilmelidir.*

Anahtar Kelimeler: *destek, doğum, eğitim, gebelik*

INTRODUCTION

Childbirth is a process that can be both a pleasing and worrisome experience for women. In particular, nulliparous women express increased concerns that can be attributed to their insufficient knowledge regarding childbirth (1). Childbirth education classes (CEC) is well-organised in many Western countries for several years. It aims to increase awareness on the birth process, antenatal and postnatal depression, pain relief, breastfeeding, and self-confidence in women's ability to give birth and become parents. Due to beneficial effects, health-care professionals commonly advise childbirth education to women.

In 2014 Turkey Government introduced CEC as an integrated part of antenatal care (2). The main components of education are maternal exercise and relaxation techniques, informing about pregnancy and childbirth, breastfeeding techniques, and protection from postpartum depression. The classes consisted of small groups, including fathers, and were led by midwives. Although CEC is widely accepted in our country, many women can not benefit from this opportunity in rural regions due to social problems.

We aimed to determine the effects of CEC on obstetric outcomes in women who underwent labor induction with dinoprostone in an underdeveloped region of our country in this study.

MATERIAL AND METHOD

This prospective study was conducted in Tunceli State Hospital, Department of Obstetrics and Gynecology, between August 2019 and March 2020. Written informed consent was obtained from all the participants, and the local ethics committee approved the study. The inclusion criteria for the study were age between 18-40, singleton pregnan-

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cy, no presence of chronic disease, and no history of cesarean section. The control group was conducted on who did not receive childbirth education and underwent labor induction with dinoprostone. CEC group was defined as patients who fulfilled 12 lessons of CEC and performed labor induction with dinoprostone.

CEC was provided by midwives who had certified. The education program included delivery process, maternal exercise and relaxation techniques, knowledge about main features of vaginal and cesarean birth, breastfeeding techniques, avoidance of postpartum depression, and postpartum contraception. It started in the first trimester of pregnancy and continued until the last weeks of pregnancy. All participants received a total of 12 lessons. All women recommended attending classes with their husbands.

Demographic and clinical parameters such as age, parity, BMI (Body Mass Index), comorbidities, and labor induction indication was recorded. 10 mg. dinoprostone vaginal ovule (Propess, Ferring Controlled Therapeutics, England) was administered to all the participants for labor induction. Patients were examined every three hours, and cervical changes were recorded. Also, fetal heart rate and uterine activity monitored. If the patient's Bishop's score ≥6, the dinoprostone ovule was removed. If the patient had adequate uterine contractions, spontaneous labor was followed up. 5 U of oxytocin diluted in 500 ml saline and administered to patients via an infusion pump whose uterine contractions were insufficient.

Low-dose oxytocin protocol was applied for labor augmentation. Continuous fetal heart rate monetarization was administered to patients during the active phase of labor. The arrest of labor was defined as absent cervical change for ≥4 hours despite adequate contractions in the first stage of labor. The prolonged second stage of labor was defined as not the occurrence of vaginal birth within 3 hours. Fetal distress was defined as the presence of late decelerations or recurrent variable decelerations with loss of variability in cardiotocography. Dinoprostone ovule was removed after 24 hours, and we performed a cesarean section for these patients. The primary outcome was determined as vaginal birth in 48 hours. The secondary outcomes were neonatal cord Ph, APGAR scores at min 1-5, and need for NICU. The statistical analysis of patients was performed using statistical software (Statistical Package for the Social Sciences, SPSS version 24 Inc, IL, USA). The values were expressed as mean±SD. The data were analyzed with the Ki-Square and Mann-Whitney-U tests. A p-value of <0.05 was considered significant.

RESULTS

We enrolled 171 patients for this study. 82 (48%) of cases continued CEC, and 89 (52%) patients had no admission to CEC. The mean age of pregnant women was 28.5 ± 0.5 and 30±0.5 in the CE, and control groups, respectively (p:0.05) BMI was 27.5 kg/m^2 in controls, and 24.6±3.9 kg/m^2 in CE group and this difference was not significant (p:0.83). The mean gestational age at labor induction was 40.09 ± 1.3 in controls and 40.2 ± 0.1 weeks in the CEC group, and there was no difference between the two groups (p: 0.26). The mean gravida and parity of controls were 1.2±0.05 and 0.18±0.04, respectively. The mean gravida and parity of the CEC group were 1.3±0.07 and 0.26±0.67, respectively, and they were similar between groups (p: 0.73-0.66). EFW was 3467 ± 378 g in controls and 3488 ± 335 in CEC, and there was no difference (p: 0,8). Gestational Diabetes Mellitus was detected in 5 (6.1%) of controls and 7 (7.9%) of the CEC group. Also, in 3 cases (3.4%) were complicated with gestational hypertension. There was no significant difference between the two groups in terms of pregnancy complications (p:0.21). The most typical indication of labor induction was post-term pregnancy in both groups. It constituted 58-5% of controls and 61% of the CEC group. The main demographic and clinical features of the two groups was shown in Table-1.

Table 1: Comparison of clinical and demographic features of two groups.

	Control n:82(48%) Mean±SD (range) or (%)	**CE group n:89 (52%) Mean±SD (range) or (%)**	**P value**
Age	30± 0.5 (20-42)	28.5 ± 0.5 (20-42)	0.05
BMI	27.5 ± 0.2 (22-32)	24.6±3.9 (20-33)	0.83
Gestational Age	40.09 ± 1.3 (36-41)	40.2 ± 0.1 (37-41)	0.26
Gravida	1.2 ± 0.05 (1-3)	1.3 ± 0.07 (1-5)	0.73
Parity	0.18 ± 0.04 (0-2)	0.26 ± 0.67 (0-4)	0.66
Abortus	0.06 ± 0.027 (0-1)	0.04 ± 0.027 (0-2)	0.41
Estimated Fetal Weight (EFW)	3467 ± 378 (2200-4100)	3488 ± 335 (2800-4150)	0.80
Pregnancy complications	GDM= 5 (%6.1) GHT= 0 (%0)	GDM= 7 (%7.9) GHT= 3 (%3.4)	0.21
Labor induction indication (%)			
Postterm pregnancy	48 (%58.5)	61 (%68.5)	
Cholestasis	3 (%3.7)	1 (%1.1)	
Preterm ruptures of membranes	20 (%24.4)	19 (%21.3)	
Gestational hypertension	0 (%0)	1 (%1.1)	
Oligohydramnios	7 (%8.5)	3 (%3.4)	
IUGR	1 (%1.2)	1 (%1.1)	
GDM	3 (%3.7)	2 (%2.2)	

SD: Standart deviation, IUGR: İntrauterine growth retardation, GDM: Gestational diabetes mellitus, GHT: Gestational hypertension.

Table 2: Perinatal outcomes of two groups.

	Control n:82 (48%) Mean±SD (range) or (%)	CE group: 89 (52%) Mean±SD (range) or (%)	p value
Delivery route	Vaginal=57 (%69.5) Cesarean=25 (%30.5)	Vaginal= 74 (%83.1) Cesarean= 15 (%16.9)	0.03
Cesarean indication	CPD: 8 (%9.8)	CPD: 6 (%6.7)	
	Fetal Distress: 13 (%15.9)	Fetal Distress: 4 (%4.5)	
	The Arrest of Labor: 4 (%4.9)	The Arrest of Labor: 5 (%5.6)	
Birthweight	3364 ± 487 (2090-4310)	3417 ± 469 (2540-4650)	0.52
Cord Ph	7.38 ± 0.05 (7.19-7.56)	7.31 ± 0.04 (7.14-7.56)	0.67
APGAR 1. Min.	8.3 (7-9)	9.2 (6-9)	0.46
APGAR 5. Min.	9.6 (8-10)	9.5 (8-10)	0.71
NICU admission	11 (%13.4)	15 (%16.9)	0.53

SD: Standart deviation, CPD = cephalopelvic disproportion, NICU = neonatal intensive care unit.

69.5% of patients delivered vaginally, and we performed a cesarean section in 30.5% of cases in control groups. 83.1% of cases achieved vaginal delivery, and 16.9% underwent cesarean section in the CEC group. The vaginal birth rate was significantly higher in the CEC group than controls (p: 0.03). Mean birth weight was 3364 ± 487 g in controls and 3417 ± 469 in the CEC group (p: 0.52). Mean APGAR scores at min 1 and min 5 were 8.3 and 9.6 in controls, 9.2, and 9.5 in the CEC group, respectively, and there was no significant difference (p: 0.46-0.71). Mean umbilical cord ph was 7.38 ± 0.05 in controls and 7.31 ± 0.04 in CEC patients and it was similar between groups (p: 0.67). 13.4% of offspring need to NICU admission in controls and 16.9% in CEC group, and it was not significantly different (p: 0.53). Perinatal outcomes of participants were summarized in Table-2.

DISCUSSION

We showed that CEC increases the vaginal birth rate among women who underwent labor induction; however, it has no beneficial effect on neonatal outcomes. The primary purposes of CEC are to prepare pregnant women for birth and to provide pain control. The scope of CEC has expanded over the years and nowadays includes labor and delivery, newborns, breastfeeding, contraception, and adjustment to family life with a baby. Fathers are now an integral part of CEC (3,4).

There are no informative large sample sizes randomized control trials to identify factors associated with CEC in the literature. The influence of CEC on obstetric outcomes is controversial. A Cochrane review included nine trials involving 2284 women. The education contents varied widely, and no consistent results were measured. This review concluded that the effects of general antenatal education for childbirth, parenthood, or both remain largely unknown (5). More recently, another Cochrane review analyzed non-clinical interventions for reducing unnecessary cesarean sections, including 29 studies. They found that childbirth training workshops for mothers and nurse applied relaxation training programs decreased cesarean section rates (6). Brixval et al. evaluated the effects of antenatal education in small classes on obstetric and psyco-social outcomes. They reviewed 17 studies around the world and showed that insufficient evidence exists as to whether prenatal education in small classes has any beneficial effect on obstetric or psycho-social outcomes (7).

CEC is highly effective in pain control and safe birth, also increase the satisfying experience of labor. Bilgin et al. evaluated 121 women, of whom 64 and 57 were divided into the CEC and control groups, respectively. They found that participants in the CEC group held significantly more positive birth-related perceptions. However, CEC did not affect obstetric outcomes (8). Akca et al. randomized 77 women who completed the 4-month birth preparation program and 75 women in the control group. They revealed that the women who received antenatal education experienced significantly less pain, had better communication with midwife or obstetrician during delivery, and participated more actively in decision-making before, during, and after childbirth (9). Pınar et al. evaluated 132 nulliparous women and detected lower concerns about birth, higher levels of knowledge, and faster adaptation to pregnancy and postpartum process in the CEC group. Also, they showed that the CEC group give positive feedback about labor pain and action and could start breastfeeding at an earlier stage than controls (10). Unfortunately, we could not research patients' perceptions about the labor process due to a lack of postpartum follow-up.

The CEC has been widely used to reduce cesarean rates for years, but literature emphasizes an unclear effect on the delivery route. Rasouli et al. studied the influence of CEC on the frequency of vaginal delivery in 230 nulliparous women. They found vaginal delivery rates 68.4% and 48.1% in CEC and control groups. It was significantly higher in CEC participants (11). Ferrer et al. described the differences in obstetrical results and women's childbirth satisfaction across two different models of maternity care. They evaluated 406 participants who constitute 204 of the biomedical model and 202 of the humanized model. The biomedical model defined as standard labor care. The humanized model included CEC and Lamaze techniques. They detected lower pain, increased vaginal birth rate, lower

labor duration, and lower episiotomy in the humanized group than the biomedical group (12).

Stoll et al. evaluated 624 Canadian low-risk women. 343 women attended CEC, and 281 were controls in their cohort. They found that the cesarean birth rate was lower in both nulliparous and multiparous women in the CEC group than controls (13). However, other studies did not indicate similar results. Ucar et al. recruited 101 pregnant women with 52 in the CEC group and 59 in the control group. They found that labor pain was lower, the second stage of labor was shorter, and birth was more satisfactory for the CEC group than for the controls. Despite its beneficial psychosomatic effects, CEC has no impact on cesarean rates, episiotomy, or lacerations (14). Although debatable results, ACOG, SMFM recommended continuous one-on-one support during labor and delivery to reduce primary cesarean rates (15).

The current study had numerous limitations. Firstly, a relatively small sample size reduced the accuracy of the results. The other weak point was the inability to select groups randomly. The third disadvantage was the lack of applying psychosomatic tests to the participants after labor. Due to this shortcoming, we could not compare the satisfaction of patients between the two groups. The strength points of our study was a homogenous patient selection. We solely studied women who underwent labor induction with dinoprostone.

We conducted this study in a public hospital and the least developed region of the country. However, our government supports CEC around the country. The accessibility of CEC in those areas is lower than the other parts of Turkey due to social handicaps. Nevertheless, our findings indicate that CEC may reduce cesarean birth rates and may contribute to reducing maternal morbidity and mortality.

CONCLUSION

CEC is an inexpensive option to promote maternal and neonatal health. It can be a useful tool to reduce cesarean birth rates and should be used widely all over the country.

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