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Evaluation of the Pregnant Education School Application and Its Effect on Pregnant Anxiety: A Prospective Observational Study

Gebe Eğitim Okulu Uygulamasının Değerlendirilmesi ve Uygulamanın Gebe Anksiyetesi Üzerine Etkisi: Prospektif Gözlemsel Çalışma

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ÖZET

Giriş: Kliniğimizde sistematik olarak düzenlenen gebe eğitim okulu uygulamasının değerlendirilmesi, programın anne adaylarının gebelik anksiyetesi üzerine etkilerinin incelenmesi amaçlanmıştır.

Yöntem: Prospektif gözlemsel çalışmada, gebelik kliniğinde takibi yapılan gebe kadınlara gebe eğitim okulu hakkında düzenli olarak bilgi verildi. Grup 1, Mayıs 2024 ile Aralık 2024 arasında dört oturumu tamamlayan ve gebe eğitim okulundan sertifika alan 65 gebe kadından oluştu. Grup 2, aynı dönemde eğitim hakkında bilgilendirilen ancak oturumlara katılmak istemeyen 82 gebe kadından oluştu. Demografik veriler ile gravida, parite, gebelik haftası, doğum şekli gibi klinik veriler kişisel bilgi formu olarak kayıt altına alındı. Gebelik Anksiyete Revizyon Ölçeği-2 (GAÖ-R2) formu, aynı kişiler tarafından 24. gebelik haftasında kontrol için çağrılan gebe kadınlarla yüz yüze görüşme ile dolduruldu. Elde edilen veriler gruplar arasında karşılaştırıldı.

Bulgular: Her iki grupta gebelerin yaş ortalamaları benzer idi. Grup 2'deki gebelerin paritesi (0.9±1.0 vs. 0.5±0.8, p=0.008) ve gebelik haftası (27.3±1.4 vs. 24.2±1.2,p=0.022) anlamlı olarak daha yüksek idi. Grup 1'de ilk gebelik oranı anlamlı olarak yüksek saptandı (%63.1 vs. %43.9, p=0.021). Grup 1'deki gebelerde lise ve yükseköğrenim mezunu oranı ile çalışan gebe oranı anlamlı olarak daha yüksekti (p<0.001 ve p=0.010). GAÖ-R2' nin alt gruplarından doğum korkusunun grup 2'de (10.6±3.4 vs. 8.7±2.7, p=0.049) anlamlı olarak daha yüksek olduğu; ancak engelli bir çocuğa sahip olma korkusu ve dış görünüşle ilgili kaygı açısından gruplar arasında anlamlı bir fark olmadığı görüldü (p=0.315; p=0.231). GAÖ-R2'nin total skoru ise grup 2'de anlamlı olarak daha yüksekti (26.7±7.7 vs. 21.6±5.6, p=0.001).

Sonuç: Gebe eğitim okulu, anne adayının bilinçli bir doğum eylemi gerçekleştirmesine yönelik bilgi ve beceri kazanmaları amacıyla kurumlarda düzenlenmektedir. Çalışmamızda en yüksek anksiyetenin doğum korkusuna ait olduğu, gebe okul eğitimlerini tamamlayan gebelerde anlamlı olarak doğum korkusunun daha az; ancak engelli çocuğa sahip olma korkusu ile dış görünüşe bağlı endişelerde ise fark olmadığı saptandı. Kaygı ve depresyonun ortaya çıkmasında kültürel ve bireysel farklılıkların önemli bir etkisinin olduğu bilinmekle beraber, gebe eğitim okullarının gebelik sürecindeki anksiyete üzerindeki olumlu etkilerinin olması, anne ve bebek dostu hastane stratejisinin gerekliliğini bizlere göstermektedir.

Anahtar kelimeler: Doğum hazırlığı, doğum, doğum sancısı, hamile

ABSTRACT

Aim: The aim was to evaluate the systematically organized pregnancy education school application in our clinic and to examine the effects of the program on the pregnancy anxiety of expectant mothers.

Materials and Method: In a prospective observational study, pregnant women followed at the pregnancy clinic were regularly informed about the pregnancy education school. Group 1 consisted of 65 pregnant women who completed four sessions between May 2024 and December 2024 and received a certificate from the pregnancy education school. Group 2 consisted of 82 pregnant women who were informed about the education during the same period but declined to attend the sessions. Demographic data and clinical data, such as gravida, parity, gestational age, and mode of delivery, were recorded on a personal information form. The same individuals completed the Pregnancy Anxiety Revision Scale-2 (PRAQ -R2) form during a face-to-face interview with pregnant women who were called for a check-up at 24 weeks of gestation. The data obtained were compared between the groups.

Results: The mean age of the pregnant women was similar in both groups. The parity (0.9±1.0 vs. 0.5±0.8, p=0.008) and gestational age (27.3±1.4 vs. 24.2±1.2, p=0.022) of the pregnant women in Group 2 were significantly higher. The first pregnancy rate was significantly higher in Group 1 (63.1% vs. 43.9%, p = 0.021). The rates of high school and higher education graduates, as well as the rate of working pregnant women in Group 1, were significantly higher (p < 0.001 and p = 0.010). Among the subgroups of PRAQ-R2, fear of childbirth was significantly higher in Group 2 (10.6±3.4 vs. 8.7±2.7, p=0.049); however, there was no significant difference between the groups in terms of fear of having a disabled child and anxiety about appearance (p=0.315; p=0.231). The total score of the PRAQ-R2 was significantly higher in group 2 (26.7±7.7 vs. 21.6±5.6, p = 0.001).

Conclusion: Pregnancy education schools are organized in institutions to help expectant mothers acquire the knowledge and skills necessary to facilitate a conscious birth. Our study revealed that the highest level of anxiety was related to fear of childbirth, and that those who completed pregnancy education had significantly lower levels of fear of childbirth; however, there was no difference in fear of having a disabled child or concerns about appearance. While cultural and individual differences are known to impact the emergence of anxiety and depression significantly, the positive effects of pregnancy education schools on anxiety during pregnancy highlight the need for a mother- and baby-friendly hospital strategy.

Keywords: Birth preparation, child birth, labor pain, pregnan

1. INTRODUCTION

Pregnancy is a sensitive process in which significant changes occur in a woman's life, both physiologically and psychosocially. Hormonal changes, transformations in body image, uncertainties about birth, and expectations about the responsibility of motherhood that occur during this period can cause an increase in anxiety levels in pregnant women. It is known that anxiety disorders are more common during pregnancy than previously thought. A systematic meta-analysis reported that approximately 20.7% of women were diagnosed with at least one anxiety disorder during pregnancy and the postpartum period (1). Another study found that the overall prevalence of anxiety disorders during pregnancy was 19.9%, and that this rate increased to 25.5% in early pregnancy (2). These data reveal the prevalence of anxiety disorders during pregnancy, and that they increase especially in early pregnancy. It has been reported in the literature that high anxiety levels have adverse effects on maternal health and can increase the risk of complications such as premature birth, low birth weight, and postpartum depression (3,4). Therefore, the importance of psychological support and information-based interventions during pregnancy is increasing.

“Pregnancy Education Schools”, which are also encouraged by the Ministry of Health of the Republic of Turkey, are multifaceted programs that aim to provide expectant mothers with accurate, reliable, and holistic information on pregnancy, birth, postpartum, and baby care (5). These programs offer pregnant women information on birth physiology, breathing and relaxation techniques, exercises, nutrition, baby care, and breastfeeding, enabling them to approach the birth process more consciously and in a more controlled manner. At the same time, Pregnancy Education Schools gain importance with a holistic approach that supports both psychological health and physical preparation.

The aim of this study, conducted in a tertiary center, is to evaluate pregnant women who attend Pregnancy Education Schools and to investigate the effects of this program on pregnancy anxiety.

2. MATERIAL AND METHODS

This prospective observational study was conducted in a tertiary center between May 2024 and December 2024. The study was initiated in accordance with the Helsinki Declaration criteria, following approval by the Ethics Committee of Kanuni Sultan Süleyman Hospital on 25 April 2024 (KAEK/2024.04.75). Informed consent forms were obtained from all participants.

Pregnancy education school

A systematic birth preparation program, called ‘Pregnancy Education School,’ has been implemented in our hospital since 2014, under the coordination of the Ministry of Health of the Republic of Turkey. All pregnant

women between 16 and 20 weeks of pregnancy are informed about this program, and those who wish to participate are registered in the Pregnancy Education School. Each participant receives a 3-hour training session once a week. The sessions are conducted with a group of up to 15 women. A psychiatrist, a dietician, an obstetrician-gynecologist, a sports physician, a neonatologist, and two midwives participate in the training. The training room is equipped with a projection system, birth models, posters, and gymnastics mats. Systematic training is provided during the training sessions on the anatomy and function of the female reproductive system, prenatal exercises and yoga practices, massage techniques, stages of labor, breathing exercises, operative delivery, the importance and benefits of breastfeeding, and neonatal care (Table 1). Starting from the second session, pregnant women are expected to actively participate in the training, which includes yoga and breathing exercises. Partners are not included in this program. Pregnant women who complete all four modules are awarded a certificate upon program completion. The Pregnant Education School is offered free of charge to all pregnant women who wish to participate.

Table 1. Content of pregnancy education school

Session 1	***** Physiological and psychological changes that occur during pregnancy
	* Fetal development
	* Danger signs during pregnancy and what to do
	* Exercise program and breathing exercises during pregnancy
Session 2	***** Stages of birth
	* Aromatherapy
	* Relaxation and breathing exercises during birth
	* Prenatal exercises and yoga
Session 3	***** Newborn care in the postpartum period
	* Newborn health and danger signs
	* Baby massage techniques application
Session 4	* Postpartum period
	* Postpartum Maternity Blues and What to Do
	* Family planning

Personal information form

The personal information form developed by the researchers consists of a total of 12 questions, five of which include sociodemographic characteristics of pregnant women (age, education level, employment status, spouse's occupation, economic status) and seven questions include obstetric information (gravida, parity, presence of miscarriage, presence of first pregnancy, planned pregnancy rate, gestational week, type of delivery).

Pregnancy-related anxiety questionnaire – revised 2 (PRAQ-R2)

This scale, developed by Huizink et al., was adapted to Turkish by Derya et al. (6,7). The 11-item, 5-point Likert-type scale has three subheadings: “fear of childbirth” (items 1, 2, 6, and 8), “fear of having a disabled child” (items 4, 9, 10, and 11), and “concerns about physical appearance” (items 3, 5, and 7). Item 8 on the scale is used for women who have not given birth before and is not applied to multiparous women. The items are scored between 1 and 5, and primiparous women receive a minimum of 11 and a maximum of 55 points from the scale. Multiparous women receive a minimum of 10 and a maximum of 50 points. As the score obtained from the scale increases, it is accepted that the level of anxiety during pregnancy is high. Cronbach's Alpha value of the scale was found to be 0.93 for multiparous women and 0.94 for primiparous women.

3. RESULTS

A total of 155 pregnant women who received detailed information about the Pregnancy Education School program during the 8-month study period were included in the study. Three pregnant women who registered for the Pregnancy Education School but did not complete the modules regularly, and five pregnant women who did not agree to complete the scale, were excluded from the study (Figure 1).

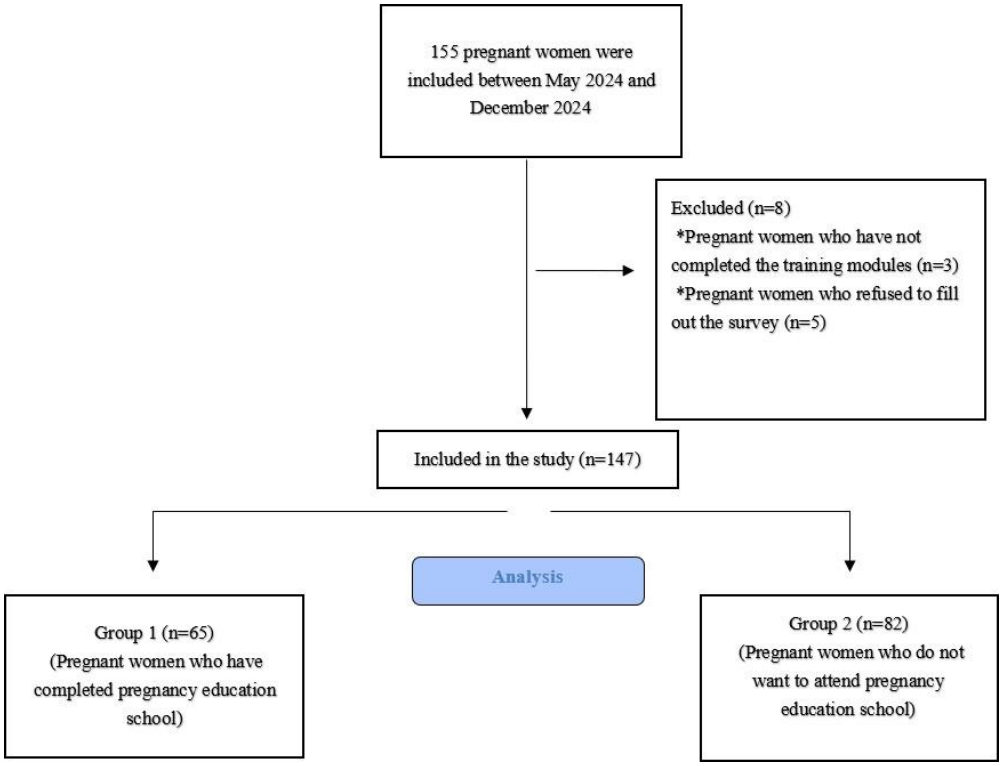

Figure 1. Flow chart of the study.

Pregnant women who completed the Pregnancy Education School were classified as Group 1 (n = 65), and those who did not wish to register for the program were classified as Group 2 (n = 82). The Pregnancy-Related

Anxiety Questionnaire–Revised 2 (PRAQ-R2) was administered to patients in Group 1 by two physicians from the Gynecology and Obstetrics Clinic, who were the study's responsible researchers, face-to-face at the 24th week of pregnancy, when they completed their education and came in for a check-up. The same scale was applied to the patients in Group 2 by the same researchers, who were called for a check-up at the 24th week of pregnancy, for similarity. Age was similar between the groups (28.3±4.3 vs. 27.7±5.9, p=0.497). The parity (0.9±1.0 vs. 0.5±0.8, p=0.008) and gestational age (27.3±1.4 vs. 24.2±1.2, p=0.022) of the pregnant women in Group 2 were significantly higher. The first pregnancy rate was significantly higher in Group 1 (63.1% vs. 43.9%, p = 0.021). The normal birth rate in the previous birth was found to be higher in Group 2, although this difference was not statistically significant (p = 0.006). The rates of high school and higher education graduates, as well as the rate of working pregnant women in Group 1, were significantly higher (p < 0.001 and p = 0.010) (Table 2).

Table 2. Demographic and clinical characteristics of the participants

	Group 1 (n=65)	**Group 2 (n=82)**	**P-value**
Age (years)	28.3±4.3 (20-44)	27.7 ±5.9 (18-42)	0.497
Gravida	1.7±0.9 (1-4)	2.4±1.8 (1-10)	**0.047**
Parity	0.5± 0.8 (0-3)	0.9±1.0 (0-4)	**0.008**
Gestational week	24.2±1.2 (22-28)	27.3±1.4 (23-30)	**0.022**
Abortus, (n,%)	13 (20)	21 (25.6)	0.423
Smoker (n,%)	2 (3.1)	7 (8.5)	0.299
First pregnancy (n,%)	41 (63.1)	36 (43.9)	0.021
Birth type history, (n,%)			0.060
Vaginal delivery	13 (20)	28 (34.1)	
Cesarean Section	11 (16,9)	18 (22)	
Education level (n,%)			**<0.001**
İlliterate	1 (1,5)	6 (7,3)	
Primary school	20 (30,8)	56 (68,3)	
High school	32 (49,2)	20 (24,4)	
University	12 (18,5)	0	
Occupation (n,%)			**0.010**
Housewife	36 (55,4)	62 (75,6)	
Worker	29 (44,6)	20 (24,4)	
Profession of partner (n,%)	63 (96,9)	80 (97,6)	0.503
Planned pregnancy (n,%)	51 (78,5)	54 (65,9)	0.093

Data are given as number of patients, percentage, mean±standard deviation, and (minimum-maksimum).

To evaluate the effect of pregnancy education school on pregnancy anxiety, the groups were called for a control at 24 weeks of gestation, and the PRAQ-R2 scale was applied to the pregnant women through a face-to-face interview. It was observed that the fear of childbirth, one of the subgroups of the PRAQ-R2, was significantly higher in group 2 (10.6±3.4 vs. 8.7±2.7, p=0.049); however, there was no significant difference between the groups in terms of fear of having a disabled child and anxiety about appearance (p=0.315;

p=0.231). The total score of PRAQ-R2 was significantly higher in group 2 (26.7±7.7 vs. 21.6±5.6, p=0.001) (Table 3).

Table 3. Comparison of Pregnancy-Related Anxiety Questionnaire-Revised 2 total scale and subscales scores of the groups

	Group 1 (n=65)	**Group 2 (n=82)**	**P-value**
PRAQ-R2			
Fear of giving birth	8.7±2.7	10.6±3.4	**0.049**
Fear of having a disabled child	8.3±4.3	9.8±4.1	0.315
Concerns about own appearance	5.0±2.3	6.4±2.8	0.231
Total score	21.6±5.6	26.7±7.7	**0.001**

Values are expressed as the mean±standart deviation.

To ensure homogeneity of education levels of the groups, the effect of pregnancy education school on anxiety was analyzed among pregnant women who graduated from high school and primary school. Fifty-two pregnant women who completed the pregnancy education program were classified as Group 1, and 76 pregnant women who were informed about the program but did not wish to participate were classified as Group 2. It was found that there was no difference in age, gravida, parity, delivery method, first pregnancy rates, and planned pregnancy rates; however, gestational week was significantly higher in group 2 (p = 0.035). In group 2, fear of childbirth (10.7±3.3 vs. 8.4±2.4, p<0.001) and fear of having a disabled child (9.9±4.0 vs. 8.3±4.0, p=0.011) subgroups of PRAQ-R2 were significantly higher; however, there was no significant difference between the groups in terms of anxiety about appearance (p=0.870) (Table 4).

Table 4. Clinical characteristics of high school and primary school graduates and PRAQ-R2 Scale Results

	Group 1 (n=52)	**Group 2 (n=76)**	**P-value**
Age (years)	28.7±4.6 (20-44)	27.6 ±5.9 (18-42)	0.156
Gravida	1.9±1.0 (1-4)	2.3±1.7 (1-10)	0.282
Parity	0.6±0.9 (0-3)	0.9±0.9 (0-4)	0.143
Gestational week	24.1±1.1 (22-27)	25.3±1.7 (23-29)	**0.035**
Abortus, (n,%)	10 (19.2)	19 (25)	0.444
Smoker (n,%)	1 (1.9)	7 (9.2)	0.141
First pregnancy (n,%)	30 (57.7)	35 (46.1)	0.196

Table 4. Continued

Birth type history, (n,%)			0.429
Vaginal delivery	13 (25)	25 (32.9)	
Cesarean Section	9 (17.3)	16 (21.1)	
Occupation (n,%)			0.161
Housewife	33 (63.5)	57 (75)	
Worker	19 (36.5)	19 (25)	
Planned pregnancy (n,%)	39 (75)	50 (65.8)	0.266
PRAQ-R2			
Fear of giving birth	8.4±2.4	10.7±3.3	**<0.001**
Fear of having a disabled child	8.3±4.0	9.9±4.0	**0.011**
Concerns about own appearance	6.0±2.4	6.2±2.7	0.870

Data are given as number of patients, percentage, mean±standard deviation, and (minimum-maksimum).

4. DISCUSSION

In this study conducted at a tertiary center, it was observed that pregnant women who completed the pregnancy education program had higher levels of education, a higher rate of working pregnant women, and better economic levels compared to those who did not attend the education program. PRAQ-R2 scale was administered to both groups by the same physician face-to-face at the 24th week of pregnancy control. It was observed that the fear of childbirth was significantly lower in the group that had completed the pregnancy education school. In addition, the parity of the pregnant women who did not want to attend the pregnancy education school and the gestational weeks they were called for control were higher. This difference was because the group applied for follow-ups at later gestational weeks and delayed their follow-up appointments. PRAQ-R2 scale was also evaluated in the study group, who were high school and primary school graduates and whose education levels were close, and it was observed that the fear of childbirth and the fear of having a disabled child were significantly higher in the pregnant women who did not attend the pregnancy education school.

Pregnancy education school is an educational program designed to enhance the experience and expectations of childbirth, providing participants with knowledge and skills regarding childbirth and postpartum care, while promoting effective communication between educators and midwives. One of the main goals of the program is to help expectant mothers manage their prenatal and postnatal anxiety. Our study was conducted in a tertiary

obstetric clinic where the different disciplines of pregnancy education schools (psychiatrist, dietician, sports medicine physician, etc.) are systematically implemented.

In a study conducted in Sweden on prenatal education, 74% of first-time mothers stated that this education helped them prepare for birth. In comparison, 40% said that these educations helped them prepare for early parenthood. It was also concluded that the rate of epidural analgesia was higher in those who attended the education, and that this difference was due to their awareness of pain relief methods rather than coping with pain due to a high sociocultural structure (8). In our study, the fact that the rate of high school and university graduates and the rate of working pregnant women who completed the pregnancy education school were higher than the rate of pregnant women who did not attend supports maximum benefit from the educations, and it was observed that the program was successful in reducing fear of birth, which was one of the main goals.

In a study conducted with 650 nulliparous and multiparous pregnant women in the third trimester, it was stated that 25% of the women experienced fear of childbirth, and this situation was positively correlated with fatigue, insomnia, and anxiety levels (9). It is known that the unknowns of childbirth, fear of harming the newborn, lack of information about the birth process, and information pollution play a role in the fear of childbirth. In a study conducted by Parsa et al., it was shown that the anxiety levels of all participants in nulliparous pregnant women were similar before counseling, and that there was a significant decrease in the anxiety level inventory after counseling in the group (10). Correcting false beliefs about pregnancy and childbirth and providing correct information can increase the compliance of women who receive counseling with the birth process. Similarly, in our study, fear of childbirth was observed to be significantly lower in participants who completed the training. Reducing the anxiety and fear experienced during childbirth will be our secondary advantage in managing the birth process more professionally, coping with labor pains, and thus preventing unnecessary analgesia use.

In another randomized controlled study in the literature, it was stated that the fear of postpartum birth, depression, anxiety and stress symptoms in the group that received antenatal education were significantly lower than the control group, and the vaginal birth rate was substantially higher (11). On the contrary, Fabian et al. found no significant difference between the type of birth among those who attended pregnancy education schools and those who did not (8). In our study, there was no statistical difference between the groups in terms of the type of birth during pregnancy and school education. When the risk factors of posttraumatic stress disorder related to birth were examined separately, it was seen that the groups in which negative birth experience, obstetric complications, and maternal and perinatal morbidity were monitored were considered high risk, and the instinct of repetition played a role in increasing the anxiety. The primary approach in treatment is to prevent the development of stress disorder by screening the group with risk factors and early

psychological intervention with trauma-focused psychological therapies (12). The fact that the fear of having a disabled child, one of the subgroups of the PRAQ-R2 scale that we applied to the participants, was not affected by the antenatal education may be because traumatic birth experiences are more effective under the anxiety of the individuals. In these cases, it would be more appropriate first to identify the risk group and reduce anxiety levels with proper treatment.

A positive birth experience can increase a mother's self-confidence. It supports a stronger mother-child relationship, while a negative birth experience can be associated with inadequate mother-child bonding, neglect of newborn care, and a process that can lead to depression (13). It has been observed that participation in prenatal education reduces the level of pain perceived during childbirth and increases satisfaction with the birth experience, thus helping women remember this critical life event more positively (14). It has also been shown that the increasing level of education of individuals affects various factors, including birth preference, anesthesia preference, and satisfaction with birth (15). The difference between prenatal education and studies may be due to a lack of quality and standardization.

Limitations of the study

The study has several limitations. First, although it was a prospective single-center observational study, randomization was not performed. All patients between the relevant dates were reached. This situation led to differences in educational level, parity, and other factors between the groups. To eliminate this limitation, primary school and high school graduates who were pregnant women were analyzed separately. Another limitation is that an anxiety scale was not administered to the participants before the pregnancy education school.

5. CONCLUSION

Pregnancy education school programs aim to support the birth process by increasing prenatal, birth, and postnatal knowledge and skills. It has been observed that the systematically implemented pregnancy education school in our clinic supports reducing the fear of birth. Health institutions enriching the content of pregnancy education schools in line with the views and expectations of expectant mothers will increase the benefits obtained from the training by providing psychological support. They may also increase interest in vaginal birth in the future.

Conflict of Interest: The authors have no conflict of interest.

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Ethics Committee Information: Ethical committee approval was obtained from the Ethics Committee of Kanuni Sultan Süleyman Hospital on 25 April 2024, under number 2024.04.75, to conduct this study.

Author Contribution: Conceptualization: HCA; Data curation: HCA, PN; Formal analysis: HCA; Investigation: HCA, PN; Methodology: HCA, PN; Resources: HCA; Software: HCA,PN; Supervision: HCA,PN; Writing – original draft: HCA; Writing – review & editing: HCA,PN

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