DOI: 10.4274/gulhane.galenos.2025.06777
Gulhane Med J 2026;68(1):7-15

The impact of antenatal education on mode of delivery and postpartum depression: a retrospective analysis

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Cite this article as: Koç Tiske P, Topcu Akduman A, Alparslan Çetin A, Türkçapar AF, Özdemir Ö. The impact of antenatal education on mode of delivery and postpartum depression: a retrospective analysis. *Gulhane Med J.* 2026;68(1):7-15.

Date submitted:
25.02.2025
Date accepted:
01.08.2025
Epub:
24.02.2026
Publication Date:
18.03.2026

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Keywords: Antenatal education, obstetric outcomes, postpartum depression, social support, retrospective study

ABSTRACT

Aims: This study aimed to evaluate the impact of antenatal education on childbirth-related anxiety, mode of delivery, and the risk of postpartum depression (PPD). A secondary aim was to assess the relationship between antenatal education, obstetric outcomes, social support, and demographic characteristics.

Methods: This retrospective observational study included postpartum women who received antenatal care and delivered at the same tertiary center. Participants were categorized according to whether they attended an antenatal education program. Demographic characteristics, obstetric outcomes, and Edinburgh Postnatal Depression Scale (EPDS) scores were obtained from routine postpartum assessments. The primary endpoint was the effect of antenatal education on PPD risk (EPDS ≥13). Secondary endpoints included mode of delivery, social support, and factors associated with EPDS scores.

Results: The study included 265 women (mean age: 28.72±5.42 years). The rate of spontaneous vaginal delivery was higher among women who attended antenatal education (54.13%; p=0.021), while cesarean section was more common among those who did not attend (60.26%; p=0.021). Attendees had higher educational levels and more frequent support with infant care (p<0.05). The mean EPDS score was 6.22±5.04, and there was no significant difference in EPDS scores between attendees and non-attendees (6.83 and 5.81; p=0.095). Higher gravida, parity, and number of living children were associated with lower EPDS scores (p<0.001). The proportion of women classified as high risk for PPD (EPDS ≥13) was similar between the two groups (12.15% and 9.62%; p=0.513).

Conclusions: Antenatal education was associated with higher rates of vaginal delivery and increased social support, but it did not significantly reduce PPD risk. Increasing gravida, parity, and number of living children were associated with lower EPDS scores. While antenatal education contributed positively to obstetric outcomes, it may be insufficient alone to reduce the likelihood of PPD.

Introduction

Pregnancy and the postpartum period are essential stages in a woman's life, during which profound physiological, hormonal, and emotional alterations occur. Although these processes are considered natural, concerns regarding miscarriage, fetal abnormalities, fear of childbirth, and doubts about maternal competence can significantly increase maternal anxiety as pregnancy advances. Anxiety about labor pain and delivery mode often peaks in the third trimester, particularly when access to information and emotional support is limited (1,2).

Based on data from the World Health Organization, caesarean section rates above 10-15% are not associated with improved maternal or neonatal outcomes. Unnecessarily high rates, however, may lead to increased risks for both mothers and newborns (3). Therefore, reducing unnecessary cesarean sections and promoting informed birth choices have become critical goals in modern obstetric care.

During this period, the mental health of the mother is also important. The hormonal changes and physical demands of pregnancy and childbirth can increase psychological vulnerability and raise the risk of postpartum depression (PPD). PPD negatively impacts not only the psychological health of mothers but also mother-infant bonding and infant development (4).

Antenatal education programs have been developed to address concerns related to childbirth and postpartum psychological risks. These programs provide evidence-based information, emotional support, and coping strategies that can help pregnant women manage their fears about childbirth and make informed decisions about the mode of delivery. Consequently, their preference for cesarean section is reduced (5,6). Furthermore, these programs can strengthen psychological resilience during the postpartum period and protect maternal mental health.

Social support and psychological guidance during pregnancy are also pivotal in facilitating a healthy transition to parenthood (6). Antenatal education programs, delivered by multidisciplinary teams including obstetricians, midwives, physiotherapists, dietitians, and psychologists, are structured to enhance maternal self-efficacy, alleviate childbirth-related fears, and encourage positive birth experiences, including promoting vaginal delivery when appropriate.

In our country, "antenatal education classes" were established in state hospitals by a circular issued by the Turkish Public Health Institution of the Ministry of Health in 2014 (7). According to the circular, these classes are led by a multidisciplinary team consisting of an obstetrician, a midwife, a physical therapist, a dietitian, and a psychologist. These programs are designed to promote positive birth experiences by enhancing mothers' self-efficacy, alleviating fears related to childbirth, and encouraging vaginal birth when appropriate.

Current research indicates that prenatal education programs significantly reduce fear of childbirth and enhance awareness of childbirth preferences (8,9). Participation in these programs has also been associated with lower rates of cesarean delivery (10,11). However, the impact of these programs on PPD is still debated. While some studies report that women who attend prenatal education classes have significantly lower PPD scores than those who do not, other studies suggest that these programs do not substantially reduce the risk of PPD (8,9-12,13).

This study aimed to investigate the effect of antenatal education on mode of delivery and PPD risk, as well as its relationship with social support, childbirth-related anxiety, and maternal demographic characteristics.

Methods

Study design and participants

This cross-sectional, descriptive study included 265 patients who were assessed for PPD using the Edinburgh Postnatal Depression Scale (EPDS) as part of standard postpartum care provided by the Turkish Ministry of Health and who received follow-up at the University of Health Sciences Türkiye, Gülhane Training and Research Hospital, Clinic of Obstetrics and Gynecology between May 2023 and May 2024. All patients received prenatal care and gave birth at the same clinic. Participation was voluntary and began four weeks after childbirth.

All eligible participants were included without applying exclusion criteria. Participants were then divided into two groups based on their participation in the antenatal education programme: participants in the programme (n=109) and those who did not (n=156, the control group). Figure 1 shows the participant inclusion process and group allocation. Participants' antenatal follow-up results, mode of delivery, and participation in the antenatal education programme were obtained from hospital records.

Ethical considerations

The study protocol complied with the ethical guidelines outlined in the 1975 Declaration of Helsinki and its revisions (most recently in 2013).

Ethical approval for the study was granted by the University of Health Sciences, Türkiye, Gülhane Training and Research Hospital Non-interventional Scientific Research Ethics Committee (approval no.: 2024/11, date: 11.07.2024).

Inclusion criteria

Volunteers were included in the study if they met the following criteria: aged between 17 and 45 years, undergoing antenatal care, delivery, and postpartum controls in our clinic, voluntarily agreed to participate in the study, and had a sufficient level of education to complete the assessment scales.

Participants with a history of psychiatric disorders or severe pregnancy complications were excluded from the study. Patients who had undergone a planned caesarean section for obstetric reasons (such as previous caesarean section, history of uterine surgery, malpresentation, placental implantation abnormalities) were also excluded from the study.

Data collection

Socio-demographic and obstetric data were collected from participants using a data form developed based on those used in other studies on this topic. Demographic variables included

age, body mass index, level of education, occupation, presence of comorbidities, parity, number of living children, availability of support for infant care, difficulties with postnatal infant care, the mother's perception of her family's financial situation, and participation in an antenatal education programme.

Obstetric outcomes of participants (mode of delivery, indication for caesarean section, birth weight, admission to neonatal intensive care unit (NICU), development of postpartum maternal complications, etc.) were obtained from hospital records.

Antenatal education program

The antenatal education program of the University of Health Sciences Türkiye, Gülhane Training and Research Hospital, Clinic of Obstetrics and Gynecology is implemented in accordance with the regulations (14) published by the Ministry of Health in 2018. The programme is conducted by a multidisciplinary team consisting of obstetricians, midwives, dietitians, physiotherapists, and psychologists. The structured education programme provides comprehensive information on healthy lifestyle habits during pregnancy, routine prenatal care, and early recognition of warning signs. It also covers nutrition and exercise recommendations during pregnancy, childbirth, and the postpartum period, as well as topics related to motherhood and parenting. The programme aims to increase mothers' awareness, encourage their active participation in care processes, and provide integrated physical, nutritional, and psychological support. Participation in antenatal education programmes for pregnant women is voluntary.

PPD assessment

To evaluate PPD symptoms, all participants were assessed using the EPDS between the 4th and 8th weeks postpartum. The EPDS was originally developed by Cox et al. (15) in 1987 and was later adapted into Turkish with validation and reliability studies conducted by Engindeniz et al. (11).

The EPDS is a 10-item, 4-point Likert-type scale, with each item scored between 0 and 3, resulting in a total score ranging from 0 to 30. The cut-off score for identifying women at risk of PPD is (15-19). Women scoring 13 or higher on the scale are considered at increased risk for PPD. The scale has been reported to have a sensitivity of 0.84 and a specificity of 0.88.

In this study, a cut-off score of ≥13 was used, and participants exceeding this threshold were classified as at risk for PPD and referred for further psychological evaluation.

Statistical Analysis

Data evaluation was conducted with SPSS (IBM Corp., Armonk, NY, USA), version 25.0. The distribution of the variables was examined for normality using the Kolmogorov-Smirnov and Shapiro-Wilk tests. For descriptive purposes, continuous variables are summarized by median, minimum,

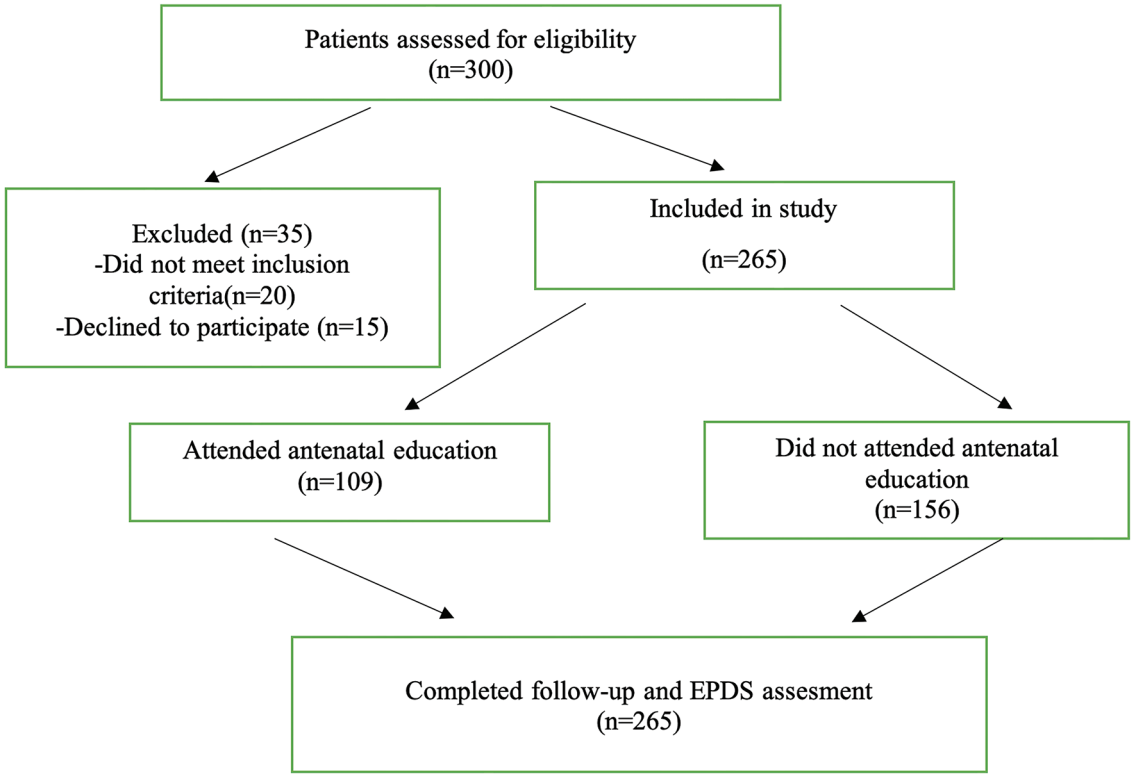

Figure 1. Participant flow diagram illustrating enrollment, group allocation, and follow-up

maximum, mean, and standard deviation, while categorical variables are expressed as counts and percentages. Because most continuous data deviated from a normal distribution, the Mann-Whitney U test was employed for comparisons between two independent groups, whereas the Kruskal-Wallis test was applied when more than two groups were compared. For categorical comparisons, Pearson's chi-square or Fisher's exact test was selected depending on data suitability. Associations between EPDS scores and other continuous variables were evaluated with Spearman's rank correlation. Statistical significance was accepted at a threshold of $p<0.05$. Multivariate logistic regression was also conducted to identify independent predictors of higher risk for postnatal depression (EPDS ≥13). Variables showing significance in univariate analyses were entered into the model, and the findings are presented as odds ratios with 95% confidence intervals and corresponding p-values. To ensure sufficient statistical power, an a priori sample size calculation was conducted using G*Power software (version 3.1.9.7). The target power was set at 1-β, with β representing the probability of Type II error. Assuming an anticipated effect size (Cohen's d) of 0.45, it was estimated that at least 212 participants (106 per group) would be required to achieve 95% power at a significance level of $\alpha=0.05$.

Results

A total of 265 participants who underwent antenatal follow-up and delivery at University of Health Sciences, Türkiye, between 2023 and 2024, were included in the study. Among them, 41.13% (n=109) attended the antenatal education program, while 58.87% (n=156) did not participate.

Socio-demographic factors, participant characteristics, EPDS scores, and antenatal education attendance.

The mean age of the participants was 28.72 years (±5.42), and the mean EPDS score was 6.22 (±5.04), with a median score of 5 (range: 0-23). The number of participants classified as high risk for PPD (EPDS score ≥13) was 28 (10.65%). Table 1 summarizes the remaining socio-demographic data.

Participants who attended the antenatal education program had a significantly higher educational level (high school or above) compared to those who did not attend (p=0.043). Additionally, the presence of an individual providing support in infant care was significantly more frequent among those who attended antenatal education than those who did not (p=0.003) (Table 1).

Obstetric outcomes and EPDS classification

No statistically significant association was found between planned pregnancy status (p=0.272), infant sex (p=0.625), term or preterm birth (p=0.561), NICU admission (p=0.498), or postnatal follow-up difficulties (p=0.807) and EPDS classification or antenatal education attendance (Table 1). A significant difference was observed between the groups in terms of mode of delivery. The rate of spontaneous vaginal delivery was higher among those who attended antenatal education, compared to those who did not (54.13% vs. 39.74%, p=0.021). Conversely, the cesarean section rate was significantly higher in the non-attendee group than in those who attended the program (60.26% vs. 45.87%, p=0.021) (Table 1).

The mean EPDS score was 6.22 (±5.04), and no significant difference was found between antenatal education attendees and non-attendees (6.83 vs. 5.81, p=0.095) (Table 1).

Although the proportion of participants classified as high risk for PPD (EPDS ≥13) was higher among those who attended antenatal education, this difference was not statistically significant (12.15% vs. 9.62%, p=0.513) (Table 1).

In the study, gravida ($p<0.001$), parity ($p<0.001$), and the number of living children ($p<0.001$), were found to be higher in those who did not attend the pregnancy school compared to those who did. Additionally, the age gap between the youngest sibling and the newborn was lower in the non-attending group (p=0.037) (Table 2).

In addition, no statistically significant differences were found between groups according to EPDS risk classification when comparing socio-demographic characteristics, medical history, obstetric outcomes, neonatal parameters, and postnatal infant health concerns ($p>0.05$ for all) (Table 3).

After adjustment for potential confounders, the multivariate logistic regression model did not identify any of the examined variables—including perceived financial status (p=0.289), mode of delivery (p=0.254), infant care assistance (p=0.251), and postnatal infant health concerns (p=0.118)—as independent predictors of PPD. This outcome implies that inter-variable interactions may partly explain the non-significant associations observed in the univariate analyses (Table 4).

Discussion

The findings revealed that participation in antenatal education was associated with a significantly higher rate of vaginal delivery. However, no significant difference was observed in EPDS scores between the groups, suggesting that the antenatal education program alone may not be sufficient to reduce the risk of PPD. Additionally, while a higher level of perceived social support was observed in the antenatal education group, the difference did not reach statistical significance.

However, a study by Gürkan and Ekşi (13) found no significant effect of antenatal education on reducing PPD risk, which aligns with our results (20). PPD is influenced by multiple biological and psychosocial factors, including hormonal fluctuations, psychological vulnerability, limited social support, and economic hardship (21), suggesting that no single intervention alone is sufficient for its prevention. Although participation in antenatal education was more common among women with higher

Table 1. Comparison of socio-demographic factors, participant characteristics, obstetric outcomes, and EPDS scores based on participation in the antenatal education

Variables		Antenatal education programme			p
			Attended (n=109)	Did not attended (n=156)	
			n (%)	n (%)	
Maternal educational level	Less than high school education	84 (31.69)	57 (36.54)	27 (24.77)	**0.043***
	High school graduate or higher	181 (68.3)	99 (63.46)	82 (75.23)	
Maternal employment status	Unemployed	220 (82.09)	134 (85.9)	86 (78.9)	0.135
	Employed	48 (17.91)	22 (14.1)	23 (21.1)	
Maternal perception of financial status (according to mother)	No	88 (33.33)	50 (32.26)	38 (34.86)	0.659
	Yes	176 (66.67)	105 (67.74)	71 (65.14)	
Presence of chronic disease	No	161 (60.75)	101 (64.74)	60 (55.05)	0.112
	Yes	104 (39.25)	55 (35.26)	49 (44.95)	
Use of medication	No	190 (71.7)	117 (75)	73 (66.97)	0.153
	Yes	75 (28.3)	39 (25)	36 (33.03)	
Assistance in infant care	No	173 (65.28)	113 (72.44)	60 (55.05)	**0.003***
	Yes	92 (34.72)	43 (27.56)	49 (44.95)	
Planned pregnancy	No	170 (64.66)	96 (61.94)	74 (68.52)	0.272
	Yes	93 (35.36)	59 (38.06)	34 (31.48)	
Mode of delivery	Vaginal delivery	121 (45.66)	62 (39.74)	59 (54.13)	**0.021***
	Cesarean section	144 (54.34)	94 (60.26)	50 (45.87)	
Newborn gender	Female	128 (48.67)	73 (47.4)	55 (50.46)	0.625
	Male	135 (51.33)	81 (52.6)	54 (49.54)	
Gestational age at birth (weeks)	Preterm (<37)	38 (14.34)	24 (15.38)	14 (12.84)	0.561
	Term (≥37)	227 (85.66)	132 (84.62)	95 (87.16)	
Neonatal hospitalization history	No	191 (72.08)	110 (70.51)	81 (74.31)	0.498
	Yes	74 (27.92)	46 (29.49)	28 (25.69)	
Postnatal follow-up issues	No	211 (79.62)	125 (80.13)	86 (78.9)	0.807
	Yes	54 (20.38)	31 (19.87)	23 (21.1)	
EPDS risk classification	Low risk	235 (89.35)	141 (90.38)	94 (87.85)	0.513
	High risk	28 (10.65)	15 (9.62)	13 (12.15)	

*: p<0.05, statistically significant. Data are presented as n (%) or mean ± standard deviation
EPDS: Edinburgh Postpartum Depression Scale

Table 2. Comparison of continuous variables based on antenatal education programme participation

Variables	Antenatal education programme				p
	Attended		Did not attended		
	Median (min-max)	Mean ± SD	Median (min-max)	Mean ± SD	
Maternal age (years)	29 (17-44)	29.13±5.73	28 (18-41)	28.14±4.92	0.18
Body mass index (kg/m²)	26.3 (16.61-43.82)	26.93±4.21	25.15 (19.53-40.27)	26.08±4.23	**0.016***
Gravida	2 (1-7)	2.33±1.26	1 (1-6)	1.74±1.07	**<0.001***
Parity	1 (0-4)	0.99±0.89	0 (0-3)	0.5±0.74	**<0.001***
Number of living children	1 (0-4)	0.94±0.85	0 (0-3)	0.46±0.69	**<0.001***
Number of abortions	0 (0-4)	0.35±0.76	0 (0-5)	0.25±0.68	0.263
Age gap with the youngest sibling (years)	4 (1-12)	4.79±2.72	5 (2-16)	6.12±3.31	**0.037***
EPDS	5 (0-23)	5.81±4.84	6 (0-22)	6.83±5.28	0.095

*: p<0.05, statistically significant. Data are presented as n (%) or mean ± SD
SD: Standard deviation, EPDS: Edinburgh Postpartum Depression Scale

Table 3. Comparison of EPDS scores based on socio-demographic and medical history according to antenatal education programme participation

Antenatal education program			EPDS classification		p
			Low risk (≤12)	High risk (≥13)	
			n (%)	n (%)	
Educational level	Less than high school education	Did not attended	53 (92.98)	4 (7.02)	1.00
		Attended	24 (92.31)	2 (7.69)	
	High school graduate or higher	Did not attended	88 (88.89)	11 (11.11)	0.615
		Attended	70 (86.42)	11 (13.58)	
Employment status	Unemployed	Did not attended	121 (90.3)	13 (9.7)	0.301
		Attended	72 (85.71)	12 (14.29)	
	Employed	Did not attended	20 (90.91)	2 (9.09)	0.608
		Attended	22 (95.65)	1 (4.35)	
Perceived financial status (according to mother)	None	Did not attended	48 (96)	2 (4)	0.395
		Attended	33 (89.19)	4 (10.81)	
	Yes	Did not attended	92 (87.62)	13 (12.38)	0.926
		Attended	61 (87.14)	9 (12.86)	
Presence of chronic disease	None	Did not attended	94 (93.07)	7 (6.93)	0.083
		Attended	49 (84.48)	9 (15.52)	
	Present	Did not attended	47 (85.45)	8 (14.55)	0.309
		Attended	45 (91.84)	4 (8.16)	
Medication use	None	Did not attended	107 (91.45)	10 (8.55)	0.363
		Attended	62 (87.32)	9 (12.68)	
	Present	Did not attended	34 (87.18)	5 (12.82)	1.00
		Attended	32 (88.89)	4 (11.11)	
Availability of assistance in infant care	None	Did not attended	104 (92.04)	9 (7.96)	0.627
		Attended	53 (89.83)	6 (10.17)	
	Present	Did not attended	37 (86.05)	6 (13.95)	0.932
		Attended	41 (85.42)	7 (14.58)	
Planned pregnancy	Yes	Did not attended	52 (88.14)	7 (11.86)	1.00
		Attended	29 (87.88)	4 (12.12)	
	No	Did not attended	88 (91.67)	8 (8.33)	0.392
		Attended	64 (87.67)	9 (12.33)	
Mode of delivery	Vaginal delivery	Did not attended	54 (87.1)	8 (12.9)	0.886
		Attended	50 (86.21)	8 (13.79)	
	Cesarean section	Did not attended	87 (92.55)	7 (7.45)	0.545
		Attended	44 (89.8)	5 (10.2)	
Gestational age at delivery	Preterm	Did not attended	19 (79.17)	5 (20.83)	0.137
		Attended	14 (100)	0 (0)	
	Term	Did not attended	122 (92.42)	10 (7.58)	0.818
		Attended	80 (86.02)	13 (13.98)	
Infant sex	Female	Did not attended	64 (87.67)	9 (12.33)	0.610
		Attended	48 (90.57)	5 (9.43)	
	Male	Did not attended	75 (92.59)	6 (7.41)	0.167
		Attended	46 (85.19)	8 (14.81)	

Table 3. Continued

Antenatal education program			EPDS classification		p
			Low risk (≤12)	High risk (≥13)	
			n (%)	n (%)	
Neonatal intensive care unit admission	None	Did not attended	100 (90.91)	10 (9.09)	0.312
		Attended	69 (86.25)	11 (13.75)	
	Present	Did not attended	41 (89.13)	5 (10.87)	1.00
		Attended	25 (92.59)	2 (7.41)	
Postnatal infant health concerns	None	Did not attended	110 (88)	15 (12)	0.839
		Attended	74 (87.06)	11 (12.94)	
	Present	Did not attended	31 (100)	0 (0)	0.168
		Attended	20 (90.91)	2 (9.09)	

AEP: Antenatal education program, EPDS: Edinburgh Postnatal Depression Scale

Table 4. Effect of independent risk factors on high depression risk: logistic regression analysis

Risk factors	B	Standard error	p	OR	95% Confidence interval	
					Lower	Upper
Perceived financial status (insufficient)	-0.519	0.490	0.289	0.595	0.228	1.554
Mode of delivery (CS)	-0.467	0.409	0.254	0.627	0.281	1.398
Presence of assistance in infant care (no)	-0.473	0.412	0.251	0.623	0.278	1.397
Postnatal infant health concerns (present)	-1.180	0.755	0.118	0.307	0.070	1.350

CS: Cesarean section, OR: Odds ratio, CI: Confidence interval

education, it did not significantly affect EPDS scores across socio-demographic variables such as chronic illness, medication use, financial status, or support in infant care.

The high educational level of participants in both groups may be one of the possible reasons why no significant association was found between participation in antenatal education classes and the risk of PPD.

This finding is consistent with studies by Leung et al. (21) and McLearn et al. (22), while other studies in the literature indicate that a low level of education is a risk factor for PPD (23).

The results suggest that mothers who participated in the antenatal education programme had stronger social support systems and were more likely to receive help with infant care. Social support has been identified in the literature as one of the most critical protective factors against PPD (24). A study conducted in Japan demonstrated that maternal self-efficacy is shaped by environmental support, which plays a crucial role in reducing the risk of PPD (21). However, despite the stronger social support systems observed in our study, no significant effect on EPDS scores was detected. This suggests that social support alone may not be sufficient and further reinforces the multifactorial nature of PPD.

It has been suggested that unplanned pregnancies negatively affect maternal psychological well-being and reduce mothers' ability to cope with postpartum challenges (25,26). Similarly, a study by Durukan et al. (20) emphasized that unplanned pregnancies increase the risk of PPD and that planned pregnancies have a positive effect on maternal psychological well-being. Likewise, Brockington et al. (27) reported that mothers with unwanted pregnancies may exhibit a lack of interest or even negative emotions toward their newborns in the postpartum period, thereby increasing the likelihood of PPD. However, contradictory findings also exist in the literature. Similar to our study, Ulusoy (28) and Demir et al. (29) did not find a significant relationship between pregnancy planning status and the risk of PPD. Additionally, studies by Gonidakis et al. (30) and Efe et al. (25) reported that whether a pregnancy was planned or unplanned had no statistically significant impact on the frequency of PPD symptoms.

The literature highlights that antenatal education programmes, particularly those that include individualised counselling, provide significant benefits to mothers and parents during pregnancy and the postpartum period (29-31).

The literature suggests that childbirth preparation courses support women's preference for vaginal delivery and reduce cesarean section rates (10). This finding indicates that educational programs play an important role in preparing women for childbirth and alleviating fear related to labor. The preparation facilitated through education may enable women to approach the childbirth process more positively and contribute to a reduction in cesarean rates (32). The increase in awareness

and reduction in fear among educated participants could be a crucial factor in supporting vaginal delivery. This aligns with the perspective that education enhances women's sense of control over their own bodies, thereby influencing their birth preferences (33).

In our country, antenatal education programs are promoted nationwide through initiatives led by the Ministry of Health, aiming to reach every pregnant woman (13). New regulations are currently under development to enhance and standardize these programs.

Although the antenatal education program in our study was designed to be structured and multidisciplinary, certain limitations should be acknowledged. The relatively brief duration of the sessions (6-8 hours) may have been insufficient to yield lasting behavioral or psychological outcomes, particularly in postpartum adjustment and anxiety reduction. As this was a single-center study conducted at a tertiary care hospital, the antenatal education group primarily included women with higher educational attainment, the findings may not be generalizable to the broader pregnant population.

Moreover, the lack of nationwide standardization in antenatal education programs—regarding content, educator qualifications, and delivery methods—may have affected the consistency and comparability of outcomes. The absence of systematic pre- and post-intervention evaluations, as noted in the literature, also limits the robustness of conclusions regarding their effectiveness.

Despite these limitations, this study provides valuable insights as one of the few retrospective analyses in Türkiye evaluating both obstetric and psychological outcomes related to antenatal education. The study, conducted in a real-world clinical setting with a multidisciplinary team, reflects routine tertiary care practice. An adequate sample size, determined through power analysis, enhances the reliability of the findings and contributes to national strategies for maternal health education.

Conclusion

This study reinforces the role of antenatal education in improving maternal health, particularly by increasing vaginal delivery rates and reducing unnecessary cesarean sections. Although a clear reduction in PPD was not observed, this finding highlights the need for more comprehensive and longitudinal educational approaches. Structured and standardized antenatal education programs hold promise as an effective public health strategy to enhance maternal and neonatal outcomes. National expansion of these programs, inclusion of both parents, and evaluation across diverse populations may further strengthen their impact. Moreover, larger multicenter studies with standardized program content and long-term follow-up are required to clarify the true effect of antenatal education on postpartum psychological outcomes.

Ethics

Ethics Committee Approval: Ethical approval for the study was granted by the Scientific Research Ethics Committee of Gülhane Health Application and Research Center (approval no: 2024/11, date: 11.07.2024).

Informed Consent: Retrospective study.

Footnotes

Authorship Contributions

Surgical and Medical Practices: P.K.T., S.A.Ç.,A.F.T., Concept: P.K.T., A.T.A., A.F.T., Ö.Ö., Design: P.K.T., A.F.T., Ö.Ö., Data Collection or Processing: P.K.T., S.A.Ç.,Analysis or Interpretation: P.K.T., A.T.A., S.A.Ç.,Ö.Ö., Literature Search: P.K.T., A.T.A., S.A.Ç.,A.F.T., Ö.Ö., Writing: P.K.T., A.F.T.

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

Financial Disclosure: The authors declared that this study received no financial support.

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