RESEARCH



The relationship between fear of birth and prenatal attachment and childbirth selfefficacy perception in Primigravida women



Buse Gürsoy¹ and Pelin Palas Karaca^{2*}

Abstract

Background Fear of childbirth is a common psychological problem. This fear negatively affects prenatal attachment, childbirth-related self-efficacy, the postpartum period, parenting development and women's health. This study was conducted to determine the relationship between fear of birth and prenatal attachment and childbirth self-efficacy perception in primigravid women.

Methods A descriptive and correlational design was used. The study was conducted with 255 primigravida women who applied to the Gynecology and Obstetrics Polyclinic of a hospital in the Marmara Region of Türkiye between December 2021 and October 2022 and agreed to participate in the study. The study data were collected using the Introductory Information Form, Wijma Delivery Expectancy/Experience Questionnaire Version A (W-DEQ-A), Prenatal Attachment Inventory (PAI), and Self-Efficacy regarding Vaginal Birth Scale (SEVB). Descriptive, comparative, and linear regression analyses were performed.

Results The mean age of the participants was 27.29 ± 6.82 . The mean score of primigravida women in total W-DEQ-A was 58.45 ± 22.59 , the mean score in total PAI was 65.05 ± 10.83 , and the mean score in total SEVB was 64.55 ± 14.10 . It was observed that as the fear of birth increased in primigravida women, their prenatal attachment (r=-0.369, p < 0.001) and childbirth self-efficacy perception (r=-0.473, p < 0.001) levels decreased. There was a significant relationship between W-DEQ-A and PBI and SEVB scores, which explained 25% (R²=0.254) of the variance (p < 0.001).

Conclusion The study found that fear of childbirth was high in primigravida women who were not working, planned to have a cesarean section, and were not ready to give birth. It was determined that this fear affected prenatal attachment and vaginal birth self-efficacy. Health professionals should be screen primigravida women for fear of childbirth and be aware that fear of childbirth negatively affects prenatal attachment and vaginal birth self-efficacy.

Keywords Fear of birth, Pregnancy, Prenatal attachment, Self-efficacy belief

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Background

Pregnancy process is one of the most important experiences in a woman's life and leads to biological, psychological, and social changes in the woman [1]. For some women, this process can be difficult; they may experience feelings of ambivalence, have difficulty accepting the maternal role, and experience fear of birth [2, 3]. Fear of birth is a common psychological problem experienced by women [4]. Reasons why a woman experiences fear of birth may include low self-efficacy perception, high body mass index, unwanted pregnancy, anxiety disorder, lack of experience, prolonged labor, refraining from healthcare professional, feeling of insecurity, thoughts that harm could be done to the baby or to oneself, and lack of social support [5, 6]. This fear negatively affects the health of the woman, the activities of daily living, the labor experience, the postpartum period, the development of parenting, and the growth of children [4, 7, 8].

Fear of birth also negatively affects the level of prenatal attachment [9-11]. Prenatal attachment is a relationship established between the pregnant woman and the baby, and this relationship begins in the prenatal period and continues after birth. Prenatal attachment helps the pregnant woman adapt to the role of motherhood and accept her baby [12]. Moreover, prenatal attachment affects newborn care positively and contributes to raising healthy individuals in the future [12-14]. Therefore, healthcare professionals should determine the attachment levels of women in the prenatal period, identify risks that negatively affect attachment, take initiatives to increase attachment, and strengthen mother-baby attachment just before the baby is born [12].

It is also stated in the literature that women who experience fear of birth have low sense of self and their self-efficacy regarding childbirth decreases [15, 16]. Childbirth self-efficacy perception is the pregnant woman's belief in her abilities to cope with the act of giving birth and is how the pregnant woman perceives it and how she can physically cope with it [17]. Childbirth selfefficacy perception helps reduce obstetric interventions and complications by ensuring that women have a positive experience of childbirth [18-20]. Moreover, childbirth self-efficacy perception allows pregnant women to feel less pain during childbirth, alleviate their fear of birth, and decide on the delivery method themselves [17]. Low self-efficacy perception towards childbirth and fear of birth can negatively affect pregnant women in particular, and women may request an elective cesarean section to avoid experiencing a potentially traumatic childbirth [17, 21, 22]. Sun et al. [23] In this context, midwives should use effective communication methods, evaluate emotions and fears of pregnant women, adopt a reassuring and supportive approach, develop coping mechanisms, reassure pregnant women, and increase their childbirth-related self-confidence [24]. In light of this information, this study was conducted to determine the relationship between fear of birth and prenatal attachment and childbirth self-efficacy perception in primigravida women. It is thought that this study may contribute to the planning of midwifery care aimed at reducing the fear of birth and increasing the perception of prenatal attachment and childbirth self-efficacy in primigravida women. Additionally, it is anticipated that the study will contribute to the literature on midwifery and further studies.

Methods

Type, population, and sample of the study

The study is of descriptive and correlational type. The universe of the study consisted of primigravida women who applied to the Gynecology and Obstetrics Polyclinic of Bursa Yüksek İhtisas Training and Research Hospital for pregnancy control between December 2021 and October 2022 and agreed to participate in the study. 8154 pregnant women apply to the Gynecology and Obstetrics Clinic of this hospital in a year. The sample of the study was selected from the universe using the non-probability sample method. Participants represent a non-probability sample from the universe of participants.

In the study, the "G. Power-3.1.9.2" program was used to determine the sufficient sample size and the sample size was calculated at a 95% confidence level. While determining the sample size of the study, the literature was reviewed by examining previous studies on the subject [25, 26]. As a result of the analysis, at the level of $\alpha = 0.05$, the standardized effect size was taken as 0.147, which was the effect size obtained from previous studies, and the minimum sample size was calculated as 193 people in total with a theoretical power of 0.80. Thus, the study was completed with 255 primigravida women who agreed to participate in the study.

All primigravida women (n = 255) who could be reached between the study dates were included in the study and a power analysis (G*Power 3.1) was performed based on the reported correlation coefficients for fear of childbirth and attachment (Spearman's r=-0.369). Posthoc power analysis for the sample showed 99% power with a correlation of pH1 = 0.369 and a margin of error of $\alpha = 0.05$. The final sample size was found to be adequate.

Inclusion criteria in the study

Primigravida women who voluntarily accepted to participate in the study, spoke Turkish, were > 28 weeks pregnant, did not have a communication barrier or a risky pregnancy, singleton pregnancy, spontaneous pregnancy, did not have any mental illness and were not receiving psychiatric treatment.

Exclusion criteria from the study

Pregnant women who filled out the study forms incompletely or who wanted to withdraw from the study.

Data collection tools

The Introductory Information Form, Wijma Delivery Expectancy/Experience Questionnaire Version A, Prenatal Attachment Inventory, and Self-Efficacy regarding Vaginal Birth Scale were used to collect the study data.

Introductory information form

The form was created by the researcher in the light of the literature and consists of a total of 18 questions to determine sociodemographic and pregnancy characteristics [25, 26].

Wijma delivery expectancy/experience questionnaire version A (W-DEQ-A)

This questionnaire was developed by Wijma et al. [27]. The validity and reliability of the questionnaire in Türkiye was conducted by Körükçü in 2009 [28]. The questionnaire measures prenatal fears and experiences of women and consists of a total of 33 items. The questionnaire is a 6-point Likert type scale. The minimum score to be obtained from the questionnaire is 0 and the maximum score is 165. The negatively loaded questions in the questionnaire [2, 3, 6-8, 11, 12, 15, 19, 20, 24, 25, 27, 31] are calculated by reversing them to ensure consistency in measurement. A high item total score indicates a high level of fear. W-DEQ score \leq 37 indicates mild fear, W-DEQ score = 38–65 indicates moderate fear, W-DEQ score = 66–84 indicates severe fear, W-DEQ score ≥ 85 indicates clinical level of fear. Wijma et al. [27] found the Cronbach alpha coefficient of the questionnaire to be 0.89 for primiparous pregnant women [28, 29]. Körükçü calculated the Cronbach Alpha coefficient of the questionnaire to be 0.88 for primiparous pregnant women and 0.90 for multiparous pregnant women [28]. In this study, the Cronbach Alpha coefficient of W-DEQ-A was 0.85, and the reliability of the scale was calculated to be high.

Prenatal attachment inventory (PAI)

This inventory was developed by Mary-Muller [30]. The validity and reliability of the scale in Turkish was made by Yılmaz and Beji [31]. The inventory, which was developed to explain the thoughts, feelings, and situations experienced by women during pregnancy and to determine their level of attachment to the baby in the prenatal period, consists of 21 items. A minimum of 21 and a maximum of 84 points can be obtained from the fourpoint Likert-type inventory. An increase in the pregnant woman's score indicates that her attachment level also increases [31]. For each item specified in the inventory,

it is required to choose one statement: "Almost never = 1 point", "Sometimes = 2 points", "Mostly = 3 points", and "Almost always = 4 points). Yilmaz and Beji [31] found the Cronbach alpha value of the inventory to be 0.84. In this study, the Cronbach Alpha coefficient of PAI was 0.85 and the reliability of the inventory was determined to be high.

Self-efficacy regarding vaginal birth scale (SEVB)

The validity and reliability study of the scale developed by Chu et al. [32] into Turkish was made by Kahraman and Alparslan [33]. The scale consists of a single dimension, similar to its original form. The scale consists of a total of 9 questions and is of the Thurstone scale type. In order to better understand prenatal self-efficacy, how confident they were in themselves, and to obtain a kind of childbirth self-efficacy coefficient, 9 items were transferred to an 11-likert visual scale on a scale from 0 to 10. The scoring is done as follows: "0 points = I have no confidence in myself, 10 points = I am very confident." While the lowest score that can be obtained from the scale is 0, the highest score that can be obtained is 90. As the scores obtained on the scale increase, the degree of self-efficacy also increases [33]. In the study, Kahraman and Alparslan [33] calculated the Cronbach alpha coefficient of the scale as 0.994 for the 2nd trimester, 0.956 for the 3rd trimester, and 0.980 for the overall scale. In this study, the Cronbach Alpha coefficient of SEVB was 0.98 and the reliability of the scale was determined to be high.

Data analysis

The data were analyzed with IBM SPSS V25. Number, percentage, mean, and standard deviation were used in the evaluation of the data. Compliance with normal distribution was examined with Kolmogorov-Smirnov and Shapiro-Wilk tests. While independent two-sample t-test was used to compare normally distributed data across paired groups, Mann-Whitney U test was used to compare non-normally distributed data. One-way analysis of variance was used to compare normally distributed data across three or more groups, and multiple comparisons were examined using Duncan test. Kruskal Wallis test was used to compare data that were not normally distributed across three or more groups, and multiple comparisons were examined using Dunn Bonferroni test. The relationships between non-normally distributed scale scores were examined using Spearman's rho correlation coefficient. For the advanced analysis for variables affecting W-DEQ-A (Model 1), PBI (Model 2), and SEVB (Model 3), multiple linear regression analysis was performed. The effects of other scale scores on W-DEQ-A were determined using linear regression analysis. The analysis results were presented as $X \pm SD$, and as

frequency and percentage for categorical data. The significance level was taken as p < 0.05.

Ethical considerations

Permission was obtained from the authors of the scales used in collecting study data via e-mail. In order to conduct the study, the Application Permit (28.12.2021) was taken from the Health Sciences Non-Interventional Research Ethics Committee (dated 12.10.2021 and numbered 45226392-044/1575), Bursa Yüksek İhtisas Training and Research Hospital, and the institutional permit was obtained from Bursa Provincial Directorate of Health (20.01.2022/799). This research was conducted in accordance with the Helsinki Declaration. Participants were informed about the purpose and procedures of the study. Before data collection, verbal and written consent of the participants was obtained with the Voluntary Consent Form.

Results

The mean age of the participants was 27.29 ± 6.82 years. It was found that 39.2% of the women were university and above, 64.3% were not working, 53.7% perceived their income status as good, and 81.6% had a nuclear family. It was observed that 58.4% of the participants had a planned pregnancy, 82.7% wanted pregnancy, 74.5% received prenatal care, 63.1% preferred vaginal birth, 34.1% had moderate fear of birth, 38.8% obtained information about birth on the internet, 84.3% felt well supported by their spouses throughout their pregnancy, and 58.8% felt ready for birth (Table 1).

Table 1 shows the findings regarding the comparison of the socio-demographic and pregnancy characteristics of the participants and the W-DEQ-A, PBI and SEVB scale scores. It was found that the pregnant women who were primary school graduates (p = 0.001), were not working (p=0.001), lived in an extended family (p=0.001), had an unplanned pregnancy (p = 0.001), did not want pregnancy (p = 0.001), wanted a caesarean section (p = 0.001), were afraid of birth (p=0.001), received information about childbirth from family/friends (p = 0.001), received moderate spousal support (p = 0.001), and did not feel ready for childbirth (p = 0.001), had high W-DEQ-A scores (p < 0.05). It was found that the pregnant women who were 30 years of age or older (p = 0.041), had a university and above (p=0.001), lived in a nuclear family (p=0.001), had a good income (p=0.034), wanted vaginal birth (p = 0.002), were less afraid of birth (p = 0.002), received information about childbirth from a healthcare professional and the internet(p = 0.001), had good spousal support during pregnancy (p = 0.001), and felt ready for childbirth (p = 0.001) had high PAI scores (p < 0.05). The pregnant women who were high school and university and above (p = 0.031), were working (p = 0.009), wanted vaginal birth (p = 0.001), had less fear of birth (p = 0.001), received information about childbirth from health-care professionals (p = 0.001), had good spousal support (p = 0.001), and felt ready for birth (p = 0.001) had high SEVB scores (p < 0.05).

As a result of the analysis performed in the study, W-DEQ-A total score was found as 58.45 ± 22.59 (min. 10, max. 114), PAI total score as 65.05 ± 10.83 (min. 41, max. 84), SEVB total score as 64.55 ± 14.10 (min. 11, max. 90, Table 2). In the study, it was determined that 18% of primigravida women had low, 45.9% had moderate, 20.4% had severe, and 15.7% had clinical level fear of birth. In the study, it was determined that as the W-DEQ-A score increased, the PAI (r = -0.369, p < 0.001) and SEVB scores decreased (r = 0.491, p < 0.001). In the study, it was found that as the PAI score increased, the SEVB increased (p < 0.001, Table 2).

Table 3 shows evaluation of variables affecting W-DEQ-A, PBI, and SEVB through multiple linear regression analysis. The linear regression analysis, Model 1 consists of the features affecting W-DEQ-A. It was determined that there was a significant relationship between working status, preferred mode of birth, fear of childbirth and feeling ready for childbirth and W-DEQ-A, explaining 33% of the variance ($R^2 = 0.330$; p < 0.001). In Model 2, it was determined that there was a significant relationship between income status, source of information about childbirth and W-DEQ-A and PBI, explaining 22.2% of the variance ($R^2 = 0.222$; p < 0.001). In Model 3, a significant relationship was determined between preferred mode of birth and SEVB, which explained 25.6% of the variance ($R^2 = 0.256$; p < 0.001; Table 3).

Table 4 shows investigating the effects of PBI and SEVB scores on the W-DEQ-A version using linear regression analysis. The linear regression model established to examine the effect of PAI and SEVB scores on the W-DEQ-A scale was found to be statistically significant (F = 42.937, p < 0.001). A one unit increase in the PAI score decreases the W-DEQ-A version score by 0.397 units (p = 0.002). A one unit increase in the SEVB score decreases the W-DEQ-A score by 0.622 units (p < 0.001, Table 4). When the R² value was examined, it was found that it explained 25% of the W-DEQ-A Version, PAI, and SEVB scores (Table 4).

Discussion

Fear of birth is one of the most common obstetric problems affecting health of women and infants and continues to be a public health problem [34, 35]. Therefore, identifying women who experience fear of birth, alleviating their fears, and providing appropriate intervention is important for both women's health and midwifery services [8]. In this study, it was determined that the primigravida women had moderate level of fear of birth

 Table 1
 Findings regarding the comparison of the socio-demographic and pregnancy characteristics of the participants and the W-DEQ-A, PBI and SEVB scale scores

		n	%	W-DEQ-A, X ±SD	PBI, X±SD	SEVB, X±SD
Age			,-			
	30 years old and under	179	70.2	59.77±22.73	64.09±11,35	65±12.98
	Over 30 years old	76	29.8	55.33±22.1	67.3±9.19	63.5±16.5
Test statistics/p				t=1.439 p=0.151	U=5703 <i>p</i> =0.041	U=6751 p= 0.925
Education Status*						
	Primary Education	62	24.3	65.31±22.73 ^a	60.97±10.36	61.24±12.91 ^a
	High School	93	36.5	60.27±21.83 ^{ab}	63.96±10.63	65.6±11.31 ^{ab}
	University and above	100	39.2	52.5±21.9 ^b	68.6±10.28	65.63±16.73 ^b
Test statistics/p				χ 2 =14.058 p =0.001	F=11.057 p=0.001	$oldsymbol{\chi}^{2}$ =6.929 p =0.031
Education level of husband						
	Primary Education	33	12.9	63±23.22	65.39±10.94 ^{ab}	61.79±15.94
	High School	93	36.5	61.45±22.39	62.68±11.07 ^a	63.68±11.26
	University and above	129	50.6	55.12±22.23	66.67±10.4 ^b	65.89±15.36
Test statistics/p				F=2.940 p= 0.055	χ 2 =6.426 p =0.040	χ 2 =5.624 p = 0.060
Working status **						
	Yes	91	35.7	50.98±20.34	66.63±10.69	67.69±12.84
	No	164	64.3	62.59±22.76	64.18±10.84	62.81±14.51
Test statistics/p				t=-4.051 <i>p</i> = 0.001	U=6482.5 <i>p</i> = 0.082	U=5983.5p= 0.009
Husband's employment status						
	Working	250	98	58.44±22.54	65.17±10.76	64.63±14.15
	Not Working	5	2	59±27.81	59±14.14	60.8±12.64
Test statistics/p				T= 0.055	U=453 <i>p</i> = 0.292	U=496 <i>p</i> = 0.429
Family type						
	Nuclear family	208	81.6	55.84±22.27	66.55±10.45	65.2±14.25
	Extended family	47	18.4	69.98±20.46	58.4±10.08	61.7±13.23
lest statistics/p				t=-3.987 <i>p</i> = 0.001	U=2818 <i>p</i> =0.001	U=4107.5 p=0.087
Income Status	C I	127	F 2 7	FC F + 20 10	CC FF + 10.2C	(5.0(+ 12.02
	Good	13/	53.7	56.5±20.19	66.55±10.26	65.96±12.82
	Average Bod*	110	45.5	00.45±25.19	03±11.18	03.09±15.33
Tost statistics /p	Ddu	Z	0.8	00 ± 7.07	52.5 ± 14.05	1 = 7079 = 0.124
Program week				0 = 7107.0 p = 0.191	0-0714.5p-0.034	0 = 7078 p = 0.134
Tregnancy week	28-31	105	11.2	58 86+21 52	64 84+10 53	64 15+13 51
	32-35	117	45.9	58.49+23.15	65 14+11 27	64 75+15 07
	36-40	33	12.9	57 +24 48	65 42 +10 53	65 12 +12 7
Test statistics/p				F=0.085 p= 0.919	$x^2 = 0.042 \ n = 0.979$	$v^2 = 0.598 \ n = 0.741$
The status of the pregnancy being planned					χ 0.012 p 0.07 p	χ 0.550 β 0.7 Π
plainea	Yes	149	58.4	54.18+21.92	65.35+11.04	64.92+13.39
	No	106	41.6	64.44±22.24	64.63±10.58	64.04±15.
Test statistics/p				t=-3.662 <i>p</i> = 0.001	U=7511.5 p=0.506	U=7814.5 p=0.887
The state of wanting pregnancy					,	
	Yes	211	82.7	55.96±21.9	65.51±10.93	64.82±14.5
	No	44	41.6	70.39±22.24	62.86±10.21	63.27±12.08
Test statistics/p				t=-3.964 <i>p</i> = 0.001	U=3991.5 <i>p</i> =0.144	U=4068.5 <i>p</i> =0.197
Prenatal care status						
	Yes	190	74.5	57.96±21.46	65.01±10.64	65.03±13.02
	No	65	25.5	62.08±25.45	65.18±11.45	63.17±16.93
Test statistics/p				U=6840.5 <i>p</i> =0.195	U=6068.5 <i>p</i> =0.836	U=5998.5 <i>p</i> =0.730
Preferred mode of birth						

Table 1 (continued)

		n	%	W-DEQ-A, X ±SD	PBI, X±SD	SEVB, X±SD
	Vaginal birth	161	63.1	52.5±20.69	66.66±10.92	67.59±12.95
	Cesarean birth	94	36.9	68.64±22.15	62.3±10.16	59.35±14.54
Test statistics/p				t=-5.854 <i>p</i> = 0.001	U=5767 <i>p</i> =0.002	U=4862 <i>p</i> =0.001
Fear of childbirth						
	Yes, little	41	16.1	56.15±18.7 ^b	66.66±10.47 ^{ab}	69.02±10.96 ^{ac}
	Yes, medium	87	34.1	60.23±18.69 ^b	63.47±9.84 ^b	63.06±11.8 ^{bc}
	Yes, very much	75	29.4	72.99 ±18.9 ^c	62.92 ±10.22 ^b	59.45 ±16.17 ^b
	No, I'm not afraid	52	20.4	36.31±18.43 ^a	69.5±12.26 ^a	70.88±13.55 ^a
Test statistics/p				F=39.880 <i>p</i> = 0.001	χ 2 =15.039 p =0.002	χ 2 =27.844 p =0.001
Source of information about birth						
	Family	55	21.6	69.42±19.62 ^b	58.96±10.5 ^a	60.62±11.16 ^a
	Friends	11	4.3	73.45±22.44 ^b	62.27±6.42 ^{abc}	60.82±13.85 ^{ab}
	Internet	99	38.8	56.57 ±21.58 ^a	65.08 ±9.94 ^b	63.96 ±13.54 ^{ab}
	Healthcare	90	35.3	51.98±22.47 ^a	69.08±10.69 ^c	68.07±15.64 ^b
	professionals					
Test statistics/p				F=9.499 <i>p</i> = 0.001	χ 2 =29.999 p =0.001	χ 2 =17.848 p =0.001
Feeling the support of her partner						
throughout her pregnancy						
	Good	215	84.3	55.67±22.35	66.21±10.4	65.75±14.08
	Average	39	15.3	73.36±17.87	58.9±11.25	58.62±12.27
	Bad*	1	0.4	75 ±	56 ±	38 ±
Test statistics/p				t=-4.678 <i>p</i> = 0.001	U=2651 <i>p</i> =0.001	U=2740.5 <i>p</i> =0.001
The feeling of being ready for birth						
	Yes	150	58.8	49.85±21.01	67.29±10.86	67.01±14.91
	No	105	41.2	70.72±18.84	61.85±10.01	61.05±12.09
Test statistics/p				t=-8.141 <i>p</i> = 0.001	U=5592 <i>p</i> =0.001	U=5437 <i>p</i> =0.001

X= Average, SD= Standard Deviation, χ^2 : Kruskal Wallis test statistic, F: Analysis of variance test statistic, t: Independent two sample t test statistics, U: Mann-Whitney U test statistics, a-c: There is no difference between groups with the same letter, * not included in the comparison

ſab	le 2	Partic	ipants' f	indings	regardin	g W-DI	EQ-A,	PBI and	I SEVB tota	l scores/	' correlat	tion coefficient	S
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	X	Sd	Min	Max	W-DEQ-A	PBE
W-DEQ-A	58.45	22.59	10.00	114.00		
PBI	65.05	10.83	41.00	84.00	-0.369*	
					< 0.001**	
SEVB	64.55	14.10	11.00	90.00	-0.473*	0.491*
					< 0.001**	< 0.001**

 $Min\!=\!Minimum, Max\!=\!Maximum, X\!=\!Average, Sd\!=\!Standard \ Deviation$

*r: Spearman's correlation

(58.45 ± 22.59). Our study finding is similar to the findings in the literature, and other studies showed that women had moderate level of fear of birth [36–39]. Unlike this study, other studies found that women experienced severe level of fear of birth [40–43]. In the study conducted by Yaylaoğlu and Zengin [44], it was found that women had low level of fear of birth. In the study carried out by Zhang et al. [45] in eastern China, it was found that 3.93% of pregnant women had severe level of fear of birth. In a study covering European countries (Belgium, Iceland, Denmark, Estonia, Norway, Sweden), it was found that 11% of women had severe level of fear of birth [46]. In a study conducted in Norway by Henriksen et al. [47], it was reported that 12% of pregnant women experienced severe level of fear of birth. In a study carried out in Slovenia, 25% of pregnant women experienced high or very high levels of fear of birth [48]. In this study, it was determined that 36.1% of pregnant women experienced severe and clinical level of fear of birth, and that educational level, employment status, and family type affected the fear of birth. In another study conducted in Türkiye, it was found that 33.1% of pregnant women experienced severe and clinical level of fear of birth [11]. When the literature is examined, it is seen that the level of fear of birth is high among pregnant women in Türkiye. In this context, it is thought that fear of birth varies depending on reasons such as socio-demographic, cultural, and pregnancy characteristics of pregnant women. Table 3 Evaluation of variables affecting W-DEQ-A, PBI, and SEVB through multiple linear regression analysis

Model 1: W-DEQ-A	β	t	p	%95 CI		Collinearity statistics	
				Low	Upper	Tolerance	VIF
Education Status	-0.005	-0.077	0.939	-3.914	3.620	0.629	1.590
Working status	0.204	3.602	< 0.001	4.362	14.892	0.855	1.170
Family type	0.082	1.264	0.207	-2.654	12.161	0.658	1.519
Planned pregnancy	-0.019	-0.290	0.772	-6.610	4.912	0.677	1.477
Desired pregnancy	0.112	1.748	0.082	-0.855	14.310	0.674	1.484
Preferred mode of birth	0.142	2.434	0.016	1.201	11.387	0.812	1.231
Fear of childbirth	-0.204	-3.809	< 0.001	-7.049	-2.244	0.963	1.039
Source of information about childbirth	-0.018	-0.247	0.805	-3.249	2.524	0.524	1.909
Spouse support	-0.017	-0.296	0.768	-7.273	5.374	0.792	1.263
Feeling ready for childbirth	0.331	5.242	< 0.001	9.465	20.862	0.692	1.445
$F = 11.994, R = 0.575, R^2 = 0.330, df1 = 10, df$	² =243, Durbin	-Watson = 1.86	9 (p<0.001)				
Model 2: PBI							
Age	0.091	1.387	0.167	-0.060	0.348	0.738	1.355
Education level of husband	-0.113	-1.724	0.086	-3.720	0.248	0.736	1.359
Income Status	-0.122	-1.997	0.047	-5.055	-0.034	0.859	1.164
Preferred mode of birth	-0.016	-0.257	0.797	-2.978	2.289	0.799	1.252
Fear of childbirth	0.010	0.174	0.862	-1.141	1.362	0.934	1.071
Source of information about childbirth	0.245	3.390	0.001	0.989	3.733	0.610	1.639
Spouse support	-0.010	-0.152	0.879	-3.502	3.000	0.788	1.269
Feeling ready for childbirth	-0.036	-0.505	0.614	-3.817	2.260	0.640	1.561
W-DEQ-A	-0.252	-3.772	< 0.001	-0.183	-0.057	0.717	1.395
$F = 7.742, R = 0.471, R^2 = 0.222, df1 = 9, df2 =$	244, Durbin-W	atson = 1.776 (µ	o<0.001)				
Model 3: SEVB							
Education Status	-0.082	-1.076	0.283	-4.178	1.226	0.528	1.894
Education level of husband	0.038	0.536	0.592	-2.057	3.596	0.595	1.682
Working status	-0.049	-0.802	0.423	-4.978	2.096	0.818	1.223
Preferred mode of birth	-0.147	-2.372	0.018	-7.437	-0.689	0.798	1.252
Fear of childbirth	-0.056	-0.962	0.337	-2.419	0.831	0.908	1.101
Source of information about childbirth	0.057	0.802	0.423	-1.045	2.481	0.606	1.651
Spouse support	-0.051	-0.831	0.407	-5.858	2.381	0.805	1.242
Feeling ready for childbirth	0.087	1.263	0.208	-1.398	6.392	0.639	1.564
W-DEQ-A	-0.455	-6.801	< 0.001	-0.366	-0.202	0.682	1.467
$E = 0.325 R = 0.506 R^2 = 0.256 df1 = 0 df2 =$	- 244 Durbin-W	atson - 1 810 (2 < 0.001				

Note. Model I. The effect of working status, preferred mode of birth, fear of childbirth and feeling ready for childbirth on W-DEQ-A. Model 2. The effect of income status, source of information about childbirth and W-DEQ-A on PBI. Model 3. The effect of preferred mode of birth and W-DEQ-A on SEVB. W-DEQ-A = Wijma Delivery Expectancy/Experience Questionnaire Version A; PBI = Prenatal Attachment Inventory; SEVB = Self-Efficacy Regarding Vaginal Birth Scale; B = regression coefficient; T = degree of freedom; p = significance value; CI = confidence interval; VIF = variance inflation factor. Bold Values: p < 0.05

Table 4 Investigating the effects of PBI and SEVB scores on the W-DEQ-A version using linear regression analysis

	β ¹ (5,%95 CI)	S. error	β²	t	р	VIF
Still	124.446 (108.874–140.018)	7.907		15.739	< 0.001	
PBI	-0.397 (-0.6480.147)	0.127	-0.191	-3.123	0.002	1.258
SEVB	-0.622 (-0.8140.43)	0.098	-0.388	-6.365	< 0.001	1.258

Therefore, it is important for the health of women and babies that healthcare professionals evaluate the sociodemographic, obstetric, and cultural characteristics of pregnant women and their perception of fear of birth and provide care to pregnant women in this regard.

It is reported that fear of birth has a significant impact on childbirth outcomes, increases the rate of elective cesarean section and the risk of postpartum depression, and leads to a decrease in breastfeeding rates [4, 49]. In this study, the W-DEQ-A score of pregnant women who did not feel ready for birth and wanted a cesarean section during birth was found to be significantly higher. According to the regression model, it is seen that the preference for cesarean section in primigravida women has an effect on fear of birth. In a similar study, it was emphasized that fear of birth is a risk factor for cesarean section in pregnant women [21]. In another study conducted by Yin et al. [4], it was determined that women with high levels of fear of birth had a higher rate of cesarean section birth. Unfortunately, there is an increase in cesarean section rates both in the world and in Turkey, and the cesarean section rates in Turkey are well above the rate that the WHO recommends (15%) [50]. According to the Turkey Demographic and Health Surveys [51], the frequency of delivery by cesarean section in Turkey is 52%, and according to OECD data, it is 573 per 1000 live childbirths [50, 51]. This situation is worrying. Therefore, health professionals should ask about the fear of childbirth in primigravida women, empathize, create a safe birth environment and direct them to childbirth preparation classes. Additionally, similar to the literature, in the study, it was determined that the pregnancy of women who experienced fear of birth was not planned, it was an unwanted pregnancy, they were not ready for childbirth, and their spousal support was insufficient [5, 37]. Therefore, healthcare professionals should determine the level of fear of birth in women who are pregnant for the first time in the third trimester, investigate the factors that may cause fear of birth, and provide interventions to reduce the level of fear of birth. Moreover, healthcare professionals may refer women to mental health specialists for psychological support, depending on the severity of their fear of birth.

Fear of birth also negatively affects the level of prenatal attachment and reduces the mother's attachment to the fetus [9, 11]. In this study, it was determined that as the level of fear of birth decreased, the level of prenatal attachment increased in primigravida women. According to the regression model, fear of birth appears to have an effect on prenatal attachment. Golmakani et al. [9] found that prenatal attachment was low in pregnant women with high fear of birth. Similarly, Hildingsson and Rubertsson [52] found that prenatal attachment of pregnant women with fear of birth was low. In the study conducted by Uğurlu and Çoban [53], it was stated that as the fear of birth increased, attachment decreased. Similar to this study, in the study conducted by Kaya and Altuntu [24] it was found there was a negative and weakly significant relationship between the PAI score and the W-DEQ-A score, and as the fear of birth increased, the prenatal attachment levels of pregnant women decreased. Unlike our study, Gürol et al. [10] determined that as the fear of birth increased, the prenatal attachment levels of pregnant women also increased. These results are important because they show that the level of fear of birth negatively affects prenatal attachment in women who are pregnant for the first time. Additionally, in this study, it was determined that income level, and learning information about childbirth from a healthcare professional affected attachment. Therefore, healthcare professionals should provide supportive care to women who experience fear of birth in their first pregnancy to increase prenatal attachment and contribute to increasing attachment levels. Moreover, healthcare professionals should be aware of the variables affecting both fear of birth and attachment during antenatal follow-ups and should know that qualified support from the spouse and healthcare professionals is important in increasing prenatal attachment, and that adequate information should be provided to reduce fear of birth.

One of the most important reasons for fear of birth is the woman's low self-efficacy regarding vaginal birth. This condition is more common in primigravida women [54, 55]. In this study, it was determined that there was a negative, moderate relationship between the fear of birth of primigravida women and their self-efficacy regarding vaginal birth. This finding indicates that as the level of fear of birth decreases in primigravida women, the level of childbirth self-efficacy perception increases. In addition, it was determined that women who considered having a cesarean section during the study had low selfefficacy for vaginal birth. Similar to our research findings, it is reported in the literature that there is a significant relationship between fear of birth and self-efficacy, that fear of birth negatively affects self-efficacy and causes women to prefer cesarean Sects. [56-58]. Similarly, in the study conducted by Simon et al. [59], it was reported that the childbirth self-efficacy of primigravida women who were seriously afraid of childbirth was significantly affected. In another study, it was determined that primigravidas had lower self-efficacy and higher fear of birth than multigravidas [58]. According to these results, our study findings are similar to those of the literature, and the results obtained suggest that the childbirth self-efficacy perception reduces the fear of birth. In this context, healthcare professionals' efforts to increase childbirth self-efficacy perception of women who will give birth for the first time and to evaluate them in terms of selfefficacy to cope with the fear of birth may reduce fear of birth. Additionally, a positive, moderate correlation was determined between the mean PAI and SEVB scores of primiparous pregnant women. Similarly, in the study conducted by Bay et al. [60], it was stated that there was a relationship between prenatal attachment and childbirth self-efficacy perception level. Another study emphasized that there was a positive relationship between childbirth self-efficacy perception and secure attachment [61]. According to these findings, it can be said that as the prenatal attachment level of primiparous pregnant women increases, their childbirth self-efficacy perception level also increases. Consequently, healthcare professionals can contribute to women's self-efficacy perception levels regarding childbirth by providing supportive interventions that will increase their attachment levels.

Limitations of the study

The study cannot be generalized because the study data were collected in a specific hospital and women who fit the sample were included in the study. The study can only be generalized to its own universe. Other limitations of the study include the fact that the study was conducted with primigravida women who had been pregnant for 28 weeks or more and that the study findings can be generalized to the primigravida women who participated in this study.

Conclusions

In this study, it was seen that fear of birth in primigravida women negatively affected prenatal attachment and perception of self-efficacy for normal birth. Therefore, health professionals should evaluate primigravida women in terms of fear of birth, prenatal attachment and perception of self-efficacy for birth. In addition, health professionals should determine the risk factors that pave the way for the formation of fear of birth in primigravida women, a specific program should be planned to reduce fear of birth and should be applied to prospective parents. Reducing fear of birth is important in terms of women preferring vaginal birth, decreasing cesarean rates and increasing the level of bonding between mother and baby.

Abbreviations

 PAI
 Prenatal Attachment Inventory

 SEVB
 Self-Efficacy Regarding Vaginal Birth Scale

 W-DEQ-A
 Wijma Delivery Expectancy/Experience Questionnaire Version A

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Author contributions

Study conception/design: Gürsoy, Palas Karaca; Data collection: Gürsoy; Data analysis: Gürsoy, Palas Karaca; Drafting of manuscript: Gürsoy, Palas Karaca; Critical revisions for important intellectual content: Gürsoy, Palas Karaca; Supervision: Palas Karaca.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical considerations

Permission was obtained from the authors of the scales used in collecting study data via e-mail. In order to conduct the study, the Application Permit (28.12.2021) was taken from the Health Sciences Non-Interventional Research Ethics Committee (dated 12.10.2021 and numbered 45226392-044/1575), Bursa Yüksek Ihtisas Training and Research Hospital, and the institutional permit was obtained from Bursa Provincial Directorate of Health (20.01.2022/799). This research was conducted in accordance with the Helsinki Declaration. Participants were informed about the purpose and procedures of the study. Before data collection, verbal and written consent of the participants was obtained with the Voluntary Consent Form.

Consent to participate

Not applicable.

Competing interests

The authors declare no competing interests.

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