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ORIGINAL ARTICLE

Predictors of Prenatal Breastfeeding Self-Efficacy of Women With and Without Gestational Diabetes: Results of a hospital based case-control study in Türkiye

Gestasyonel Diyabeti Olan ve Olmayan Kadınlarda Prenatal Emzirme Öz Yeterliliğinin Belirleyicileri: Türkiye'de hastane temelli bir vaka-kontrol çalışmasının sonuçları

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ABSTRACT

Background: Prenatal breastfeeding self-efficacy is an important parameter affecting the breastfeeding success and intention of women. Prenatal breastfeeding self-efficacy should be evaluated in all women with and without GDM.
Aim: The aim of the study was to examine the prenatal breastfeeding self-efficacy of women with and without Gestational Diabetes (GDM) and to determine the factors that predict prenatal breastfeeding self-efficacy.
Method: The research is a hospital-based case-control study was conducted. The study was carried out with 96 women with GDM who were compared with 98 without GDM, who were admitted to the endocrinology policlinic of a university hospital, in western Türkiye. The data were collected using the "Individual Identification Form" and the "Prenatal Breastfeeding Self-Efficacy Scale (PBSES)". For statistical analysis, t test and Chi-square test were used. Regression analyses were used to identify predictors of prenatal breastfeeding self-efficacy.
Results: PBSES of cases was 79.64±15.12 and controls was 72.01±15.62. PBSES scores of cases were significantly higher than controls ($p<0.05$). Working, family type, and information about breastfeeding were associated with breastfeeding self-efficacy in women with GDM ($p<0.05$, $R2=0.341$); educational level, working, family type, income level, trimester, information about breastfeeding, and duration of previous breastfeeding were associated with breastfeeding self-efficacy in women without GDM ($p<0.05$, $R2=0.612$). GDM increased prenatal breastfeeding self-efficacy scores by 7.6 units ($B=7.636$, $R2=0.059$).
Conclusions: The study revealed that prenatal breastfeeding self-efficacy was higher in women with GDM, it was high in both groups. Prenatal breastfeeding self-efficacy (PBSE) was affected by some sociodemographic, obstetric, and breastfeeding-related characteristics. Health professionals should determine the breastfeeding self-efficacy of pregnant women, know the factors affecting them, and consider them when providing education and counseling. Prenatal education and support programs should be developed to increase the breastfeeding self-efficacy of women with and without GDM.

Keywords: breastfeeding, self-efficacy, diabetes, gestational, pregnant

ÖZ

Giriş: Doğum öncesi emzirme öz yeterliliği, kadınların emzirme başarısını ve niyetini etkileyen önemli bir parametredir. Doğum öncesi emzirme öz yeterliliği GDM'si olan ve olmayan tüm kadınlarda değerlendirilmelidir.
Amaç: Çalışmanın amacı Gestasyonel Diyabeti (GDM) olan ve olmayan kadınların doğum öncesi emzirme öz yeterliliklerini incelemek ve doğum öncesi emzirme öz yeterliliğini yordayan faktörleri belirlemektir.
Yöntem: Araştırma hastane tabanlı bir vaka-kontrol çalışmasıdır. Çalışma, Türkiye'nin batısındaki bir üniversite hastanesinin endokrinoloji polikliniğine başvuran GDM'li 96 kadın ile GDM'si olmayan 98 kadının karşılaştırılmasıyla gerçekleştirilmiştir. Veriler "Birey Tanımlama Formu" ve "Prenatal Emzirme Öz Yeterlilik Ölçeği (PEÖTÖ)" kullanılarak toplanmıştır. İstatistiksel analiz için t testi ve Ki-kare testi kullanılmıştır. Regresyon analizleri doğum öncesi emzirme öz yeterliliğinin belirleyicilerini tanımlamak için kullanılmıştır.
Bulgular: Olguların PEÖTÖ'i 79.64±15.12 ve kontrollerin 72.01±15.62'dir. Olguların PEÖTÖ puanları kontrollere göre anlamlı olarak daha yüksektir ($p<0.05$). GDM'li kadınlarda çalışma, aile tipi ve emzirme hakkında bilgi sahibi olma emzirme öz yeterliliği ile ilişkiliyken ($p<0.05$, $R2=0.341$); GDM'si olmayan kadınlarda eğitim düzeyi, çalışma, aile tipi, gelir düzeyi, trimester, emzirme hakkında bilgi sahibi olma ve daha önce emzirme süresi emzirme öz yeterliliği ile ilişkiliydi ($p<0.05$, $R2=0.612$). GDM, prenatal emzirme öz yeterlilik puanlarını 7,6 birim artırmıştır ($B=7,636$, $R2=0,059$).
Sonuçlar: Çalışma, doğum öncesi emzirme öz yeterliliğinin GDM'li kadınlarda daha yüksek olduğunu, her iki grupta da yüksek olduğunu ortaya koymuştur. Prenatal emzirme öz yeterliliği (PEÖY) bazı sosyodemografik, obstetrik ve emzirme ile ilgili özelliklerden etkilenmiştir. Sağlık profesyonelleri gebelerin emzirme öz yeterliliklerini belirlemeli, etkileyen faktörleri bilmeli ve eğitim ve danışmanlık verirken bunları göz önünde bulundurmalıdır. GDM'si olan ve olmayan kadınların emzirme öz yeterliliğini artırmak için doğum öncesi eğitim ve destek programları geliştirilmelidir.

Anahtar Kelimeler: emzirme, öz yeterlilik, diyabet, gestasyonel, gebe

Introduction

Prenatal breastfeeding self-efficacy (PBSE) encompasses a pregnant woman's confidence, intention, proficiency, and understanding regarding her ability to successfully breastfeed her infant postpartum.

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It also refers to her belief in her ability to successfully initiate, maintain, and intend breastfeeding. It is a key factor that can influence a woman's decision to breastfeed and her confidence in her breastfeeding capabilities (1,2). PBSE was influenced by women's access to accurate and comprehensive information about breastfeeding during pregnancy, social support systems (partners, family, friends, and health professionals), previous breastfeeding experiences, and barriers to breastfeeding (concerns about milk production and milk adequacy, etc.) (3-6). PBSE should be questioned in all pregnant women because it affects breastfeeding intention and success and even breastfeeding duration. It was reported that women with low PBSE had problems with initiating breastfeeding and stopped breastfeeding early (3,7,8).

Gestational diabetes mellitus (GDM) affects approximately 7-15% of pregnancies worldwide and breastfeeding contributes significantly to the management of GDM (8). Gestational diabetes mellitus (GDM) is a type of diabetes that manifests during pregnancy when the body is unable to produce sufficient insulin to accommodate the heightened physiological demands, resulting in elevated blood glucose levels. Breastfeeding in women with GDM has been reported to have potential benefits in terms of blood glucose control (6,7). Breastfeeding helped to utilize glucose for milk production, which contributed to better management of blood glucose in the mother (3-5). Therefore, increasing PBSE in women with GDM increased motivation to breastfeed and potentially helped blood glucose control. Providing information to women with GDM about the benefits of breastfeeding in blood glucose management and concerns or barriers to breastfeeding self-efficacy also increased women's success in breastfeeding after delivery (7, 9-11).

For mothers with GDM, breastfeeding offers additional benefits such as improved glucose regulation and reduced long-term diabetes risk. However, these individuals often face unique barriers that can affect their confidence and ability to initiate and maintain breastfeeding. Understanding the concept of breastfeeding self-efficacy, which refers to a mother's confidence in her ability to successfully breastfeed, is critical for designing interventions tailored to this population. Identifying PBSE in women with GDM has provided an opportunity to assess and support the breastfeeding beliefs, intentions, desires, and skills of these women diagnosed with GDM during pregnancy (12-14). Our study revealed the points that healthcare professionals should pay attention to.

It was necessary to ensure that women with GDM had access to breastfeeding counselors or breastfeeding support groups and to offer support. This support, which should start during pregnancy and continue in the postnatal period, can further increase breastfeeding self-efficacy and promote successful breastfeeding (7,9). Considering all these, prenatal breastfeeding self-efficacy played a key role in the breastfeeding process (an important influence on breastfeeding decision and ability) in women with GDM (7,9,13-15). In women with GDM, addressing breastfeeding self-efficacy was becoming even more critical because of its potential role in blood glucose control and overall maternal and infant health (16-18). Identifying and addressing the factors affecting breastfeeding self-efficacy and perceived barriers to breastfeeding in all pregnant women increased self-efficacy (18-20). Our study aimed to help health professionals to develop strategies to overcome these barriers for pregnant women. Health professionals should provide accurate information, address concerns, and offer guidance during antenatal visits. Recognizing that each woman's experience is unique, health professionals should tailor their support and education to the individual needs and circumstances of women with and without GDM and provide psychosocial support. Health professionals should prioritize assessing and addressing self-efficacy during antenatal care to improve breastfeeding outcomes and promote the numerous health benefits of breastfeeding for both mother and child (14,17, 21,22). Our study contributes to the breastfeeding self-efficacy of women with GDM in many ways. It also sheds light on how the presence of gestational diabetes can affect a woman's self-confidence and readiness to breastfeed her newborn. It also contributes to a better understanding of how gestational diabetes can affect PBSE and informs strategies to support women with and without gestational diabetes in their breastfeeding process. Our study also revealed factors associated with PBSE. It contributed to the development of evidence-based strategies to support breastfeeding self-efficacy in this population to improve maternal and newborn health outcomes. In this context, the aim of the study was to examine the PBSE of women with and without Gestational Diabetes (GDM) and to determine the factors that predict PBSE.

Materials and Methods

Study Design

A hospital-based case-control study was conducted in the endocrinology policlinic of a university hospital in Izmir, in western Türkiye, to assess prenatal breastfeeding self-efficacy for women with and without GDM, between April 2023 and August 2023.

Participants

The study cases included 96 women with GDM who were admitted to the endocrinology policlinic of a university hospital in western Türkiye. To achieve the desired sample size, researchers visited the clinic twice weekly (on Tuesdays and Thursdays) during the study period. Out of 152 women who attended the clinic, all were invited to participate in the study. However, 34 women with GDM were excluded from the sample as they did not meet the inclusion criteria (11 of them had Type 1 diabetes, 8 had another chronic disease, 2 had any pregnancy complication, 2 problems restricting breastfeeding, 8 were illiterate, 2 can not speak Turkish, and 1 had neurological or psychiatric disorders), 14 women refused the study and 8 women did not complete the questionnaires. The study involved 96 women diagnosed with GDM.

The study controls included 98 women without gestational diabetes mellitus (GDM) residing in the same geographical region, who were admitted to the endocrinology policlinic of the same hospital during the same interval. All pregnant women are referred to the endocrinology policlinic. All pregnant women undergo oral glucose tolerance test and the results are evaluated for GDM. Women with a negative oral glucose tolerance test were included in the control group. To recruit the control group, researchers visited the clinic twice weekly (on Mondays and Wednesdays) during the study period. Of the 165 women without GDM who attended the clinic for routine check-ups, all were invited to participate in the control sample. However, throughout the study duration, 40 women were excluded from the control sample due to their failure to meet the predefined inclusion criteria (10 had another chronic disease, 16 women with GDM, 2 had any pregnancy complication, 5 had problems restricting breastfeeding, 4 were illiterate, 2 can not speak Turkish, and 1 had neurological or psychiatric disorders), 17 women declined participation in the study, and an additional 10 women did not complete the questionnaires. The controls comprised 98 women who did not have GDM.

The sample size analysis indicated a sufficient statistical power of 84% at the moderate to large effect size level, assuming a medium-large effect size of 0.65, with a significance level (alpha) of 0.05, and with 31 women allocated to each group. Finally, the analysis included 96 cases and 98 controls. The introductory, obstetric, and breastfeeding characteristics of both groups were found to be similar ($p > 0.05$). All participants provided informed consent, and the procedures adhered to the ethical standards outlined in the Helsinki Declaration. The study was conducted and reported in accordance with the STROBE statement.

Data Collection Tools

The data of the study were collected using the "Individual Identification Form" (16 questions) and the "Prenatal Breastfeeding Self-Efficacy Scale (PBSES)" (20 items). All forms were gathered through face-to-face interviews and completed by the pregnant women themselves. The completion of forms required approximately 15 minutes.

Individual Identification Form

The Individual Introduction Form was prepared by the researchers based on previous international and national studies (3,11,13,21,22). The form comprised two sections. The first section comprised 10 questions pertaining to the introductory and obstetric characteristics of pregnant women, such as age, education level, Body Mass Index (BMI), number of pregnancies, among others. The second section comprised 6 questions related to the breastfeeding characteristics of pregnant women, including breastfeeding experience, satisfaction from breastfeeding, and similar aspects.

Prenatal Breastfeeding Self-Efficacy Scale (PBSES)

The scale utilized in this study was developed by Wells et al. (2006) to assess breastfeeding self-efficacy perceptions among pregnant women. It comprises 20 items, with responses ranging from 1 "Not at all sure" to 5 "Completely sure" on a five-point Likert scale. Scores range from 20 to 100, with higher scores indicating greater perceived self-efficacy. The scale encompasses four subgroups, including skills and demands required for breastfeeding (8 items), gathering information about breastfeeding (5 items), feelings of embarrassment during breastfeeding (4 items), and social pressure when breastfeeding (3 items). The Cronbach's alpha value for the original scale was reported as 0.89 (2). Aydın and Pasinlioğlu

(2018) conducted a study to validate the scale in Turkish, yielding a Cronbach's alpha value of 0.85. In this current study, the Turkish version of the scale demonstrated a Cronbach's alpha value of 0.79, consistent with previous research (1,4,23).

Data collection

Following ethical approval from the university and the study hospital, the principal investigator liaised with the nursing departments of the hospital to secure support for the study. Approval was obtained from the nurses overseeing the endocrinology policlinic. Pregnant women attending the endocrinology policlinic, both with and without GDM, were approached for participation. Prior to administering the forms, researchers provided detailed explanations regarding the study's objectives, potential benefits, expected duration of participation, and obtained verbal and written consent from the participants. Informed consent was obtained from all participants. Upon signing the consent forms, participants completed an individual identification form and the Turkish version of the PBSES. Form completion required approximately 15 minutes, during which researchers remained available to address any inquiries. All forms were collected through face-to-face interviews conducted in a designated room within the hospital, ensuring participant privacy.

Data analysis

Data analysis was performed using the statistical package program SPSS 25.0 (IBM SPSS Statistics, Armonk, NY, USA). Comparative analyses of the introductory, obstetric, and breastfeeding characteristics between women with and without GDM were performed using Chi-square ($\chi 2$) and t-tests for categorical and continuous variables, respectively. Normality of distribution was assessed using the Kolmogorov–Smirnov test. Breastfeeding self-efficacy was assessed using the Turkish version of the PBSES, as developed by Aydın and Pasinlioğlu (2018). The PBSES scores of women with and without GDM were compared using t-tests. Linear regression analysis was conducted to ascertain the predictive impact of GDM on prenatal breastfeeding self-efficacy. Logistic regression analysis was utilized to identify predictors of prenatal breastfeeding self-efficacy in both groups (with and without GDM). The coefficient of determination (R2) was employed to calculate effect sizes in the regression models. Results were interpreted at a 95% confidence interval, with statistical significance set at $p<0.05$.

Results

Population characteristics

Among the participants who consented to the study, 96 women with GDM and 98 women without GDM completed the questionnaires. Following propensity score matching, no significant differences were observed in the introductory, obstetric, and breastfeeding characteristics between women with and without GDM. These characteristics included age, education level, employment status, income, number of pregnancies, number of living children, satisfaction from breastfeeding, duration of previous breastfeeding, and information about breastfeeding ($p>0.05$) (Table 1).

PBSES scores of women with and without GDM

The comparison of the PBSES sub-dimension and total scores of women with and without GDM was detailed in Table 2. The PBSES score of women with GDM was 79.64±15.12 and women without GDM was 72.01±15.62. PBSES sub-dimension and total scores of women with GDM were significantly higher than women without GDM ($p<0.05$) (Table 2).

Linear regression analysis of the effect of GDM on prenatal breastfeeding self-efficacy

In the study, it was determined that women with GDM affected prenatal breastfeeding self-efficacy 7.6 times more positively than women without GDM (B=7.636, p=0.001). It was determined that women with GDM were responsible for 06% of the variance in their prenatal breastfeeding self-efficacy ($p<0.05$, R2=0.059) (Table 3).

Logistic regression analysis of the factors associated with PBSES in women with and without GDM

Finally, a logistic regression analysis was used to detect any variation independently related to PBSE (dependent variables) in women with GDM. The results of multiple linear regression analysis showed that in women with GDM, PBSE was negatively associated with not working (B=-8.321, p=0.008), having a large family (B=-13.408, p=0.001) and positively associated with receiving information about breastfeeding (B=18.195, p=0.000) and explained 34% of the variance in prenatal breastfeeding self-efficacy ($p<0.05$, R2=0.341) (Table 3).

The results of multiple linear regression analysis showed that in women without GDM, PBSE was negatively associated with not working (B=-13.162, p=0.002),

Table 1. Comparison of the introductory, obstetric, and breastfeeding characteristics of women with and without GDM (n=194)

Characteristics	GDM (n=96)		Non-GDM (n=98)		Test*/p
	Mean±SD		Mean±SD		
Age	33.65±4.97		32.42±5.06		-1.704/0.090
Gestational week	28.17±3.11		27.76±3.36		-0.884/0.378
Number of pregnancy	1.80±0.93		1.69±0.72		-0.902/0.370
Number of living child	1.76±0.87		1.63±0.67		-1.134/0.260
Duration of previous breastfeeding (month)	14.20±5.71		12.09±6.58		-1.709/0.091
Desired duration of breastfeeding (month)	18.91±5.59		18.05±5.94		-2.253/0.065
	n	%	n	%	Test**/p
Education					
Under high school	24	25.0	34	34.7	2.174
High school and above	72	75.0	64	65.3	0.140
Partner' Education					
Under high school	22	22.9	27	27.6	0.552
High school and above	74	77.1	71	72.4	0.458
Work					
Working	68	70.8	57	58.2	3.397
Not working	28	29.2	41	41.8	0.065
Income					
Low	20	20.8	27	27.6	3.029
Middle	70	72.9	69	70.4	0.220
High	6	6.3	2	2.0	
Family type					
Nuclear	82	85.4	83	84.7	0.020
Extended	14	14.6	15	15.3	0.888
BMI					
Normal (19.8-26)	13	13.5	19	19.4	1.500
High (26.1-29)	20	20.8	22	22.4	0.472
Obese (29.1 and above)	63	65.6	57	58.2	
Breastfeeding experience					
Yes	49	51.0	51	52.0	0.019
No	47	49.0	47	48.0	0.889
Satisfaction from breastfeeding					
Yes	33	67.3	35	68.6	0.527
No	10	20.4	8	15.7	0.768
Don't know	6	12.2	8	15.7	
Information about breastfeeding					
Yes	86	89.6	94	95.9	2.907
No	10	10.4	4	4.1	0.088
Receiving information					
Health professionals	78	90.7	58	61.7	1.761
Social media	2	2.1	4	4.2	0.221
Friends	6	7.2	32	34.0	

SD: Standard deviation. *t: Independent two sample 't' test. **X^2: Chi-square test, p<0.05. BMI: Body Mass Index. GDM: Gestational Diabetes Mellitus

Table 2. Comparison of PBSES sub-dimension and total scores of women with and without GDM (n=194)

Scale	GDM (n=96)	Non-GDM (n=98)	
	Mean±SD	Mean±SD	Test*/p
PBSES	79.64±15.12	72.01±15.62	-3.457/0.001
PBSES sub-dimension			
Skills and demands required for breastfeeding	33.29±5.91	31.35±5.81	-2.299/0.023
Gathering information about how to breastfeed	18.79±4.73	16.67±4.68	-3.134/0.002
Breastfeeding around other people and feelings of embarrassment during breastfeeding	14.67±4.17	12.39±4.18	-3.799/0.000
Social pressure when breastfeeding	12.88±2.19	11.58±2.83	-3.576/0.000

PBSES: Prenatal Breast-Feeding Self-Efficacy Scale. SD: Standard deviation. *t: Independent two sample 't' test, p<0.05.

had extended family (B=-9.011, p=0.006), having a low income level (B=-7.241, p=0.022), being in the 3rd trimester (B=-10.597, p=0.006) and positively associated with the educational level of high school and above (B=9.377, p=0.007), receiving information about breastfeeding (B=15.436, p=0.033), and duration of previous breastfeeding (B=1.403, p=0.000) and explained 61% of the variance in prenatal breastfeeding self-efficacy (p<0.05, R2=0.612) (Table 3).

Discussion

The study was conducted to examine the PBSE of women with and without GDM and to determine the factors that predict PBSE. In this study, the PBSES score of the women with GDM (79.64±15.12) was significantly higher than women without GDM (72.01±15.62). In our study, it was found that women with GDM had a better

Table 3. Linear regression analysis to examine the effect of GDM on prenatal breastfeeding self-efficacy (n=194)

Independent Variables	B	Standard Error	β	t	CI 95%		R	R^2	Adjusted R^2	Durbin-Watson	p
Constant	72.010	1.554	-	46.340	68.945	75.075	0.242	0.059	0.054	2.125	0.000
Group (Women with GDM)	7.636	2.209	0.242	3.457	3.279	11.993					0.001
Predictors of PBSES among women with GDM (n=96)											
Constant	67.729	4.132		16.392	59.522	75.935	0.584	0.341	0.320	2.115	0.000
Work status (Not working)	-8.321	3.068	-0.251	-2.712	-14.415	-2.228					0.008
Family type (Extended)	-13.408	3.978	-0.314	-3.371	-21.309	-5.508					0.001
Information about breastfeeding (Yes)	18.195	4.257	0.369	4.274	9.740	26.651					0.000
Predictors of PBSES among women without GDM (n=98)											
Constant	50.490	8.063	-	6,262	34,194	66,787	0.782	0.612	0.534	2.938	0.000
Education (High school and above)	9.377	3.274	0.366	2,864	2,759	15,995					0.007
Work status (Not working)	-13.162	3.938	-0.444	-3,342	-21,121	-5,203					0.002
Family type (Extended)	-9.011	3.089	0.336	2,917	-15,253	-2,768					0.006
Income (Low)	-7.241	3.039	-0.293	-2,383	-13,383	-1,099					0.022
Gestational week (3rd trimester)	-10.597	3.670	-0.378	-2,887	-18,015	-3,179					0.006
Longer Previous Breastfeeding Duration (month)	1.403	0.232	0.702	6,050	,934	1,872					0.000
Information about breastfeeding (Yes)	15.436	6.975	0.247	2,213	1,338	29,534					0.033

B: Unstandardized Coefficient. β:Standardized Coefficient. CI: Confidence Interval. PBSES: Prenatal Breast-Feeding Self-Efficacy Scale. R^2: Coefficient of determination, $p<0.05$.
Women with GDM: Backward selected. Excluded Variables: Age, education, partner's education, income, gestational week, number of pregnancies, number of living children, breastfeeding experience. desired duration of breastfeeding.
Women without GDM: Backward selected. Excluded Variables: Age, education, partner's education, income, gestational week, number of pregnancies, number of living children, breastfeeding experience. desired duration of breastfeeding.

perception of breastfeeding self-efficacy. In addition, GDM positively affected the PBSES scores of pregnant women by 7.6 units. This may be because women with GDM blame themselves for the disease and think that diabetes will harm their babies. In previous studies, it was reported that pregnant women with GDM blamed themselves for the disease, were anxious and tense, and did not have enough information about the disease and its effects on the baby (15,16). Therefore, pregnant women with GDM may have more positive thoughts and attitudes about the breastfeeding process, which may have positively affected prenatal breastfeeding self-efficacy.

In the study, the PBSES scores of women with and without GDM in our study (79.64±15.12; 72.01±15.62) were higher than those of Alyousefi et al. (64.07±16.3) (13), Ince et al. (57.16±6.92) (4) and Konukoğlu and Pasinlioğlu (68.08±14.48) (23). This may be because most of the women with and without GDM in our study had breastfeeding experience, were satisfied with breastfeeding, and received information about breastfeeding. Breastfeeding self-efficacy is affected by factors such as women's individual experiences with breastfeeding, whether they want to breastfeed, and how they apply what they see around them (24, 25). In addition, the fact that women with GDM who applied to the endocrinology policlinic were informed about GDM by diabetes nurses may have increased their awareness of the breastfeeding process and breastfeeding self-efficacy. Therefore, we think that PBSES scores were higher for the women with GDM compared to women without GDM.

In the present study was determined that not working was a predictor of PBSE in women with and without GDM. Not working negatively affected PBSE. Working women have higher socioeconomic status and social support than non-working women. Lower socioeconomic status was also associated with lack of access to care and worse health outcomes (26-28). Therefore, women with low socioeconomic status may have reduced accessibility to health services related to the health problem in pregnancy, these women may be exposed to more health problems and may have difficulty in controlling the health problems.

Working is one of the important factors that increase women's social support and these women were able to reach solutions to problems more quickly (9,29). In this context, unemployed pregnant women may not have received adequate social support during pregnancy and may have more difficulty in coping with the problems and accessing health care (9,26). All these reasons may increase the health problems that unemployed women will experience during pregnancy, reduce their support, prevent their access to health care, and cause them to put breastfeeding on the back burner. Therefore, PBSE of unemployed women may have been negatively affected.

It was determined in our study that living in an extended family was a predictor of PBSE in women with and without GDM. Breastfeeding self-efficacy included the headings of desire, skill, knowledge, embarrassment, and social pressure related to breastfeeding (1,2). In many cultures, women living in extended families are responsible for the care of other family members and have more roles and responsibilities within the household (30), and therefore women may not have enough time to breastfeed their babies. However, most of the women living in extended families lived in rural areas and had difficulties accessing health care (31) therefore these women may also find it difficult to access information about breastfeeding. In addition, women living in large families had problems such as not spending enough time with their babies during breastfeeding and not having a private area where they could breastfeed (6). For this reason, women may feel ashamed of the other people they live with, may have negative perceptions about breastfeeding think that they will not have privacy, and may feel pressure to breastfeed (32) and PBSE may be negatively affected. Living in a nuclear family had a positive effect on breastfeeding motivation and breastfeeding readiness of pregnant women (33).

Receiving information about breastfeeding was an important predictor of prenatal breastfeeding self-efficacy. Receiving information about breastfeeding increased PBSES scores by 18.2 units in women with GDM and by 15.4 units in women without GDM, which was in agreement with previous studies (15, 21, 22). We would also like to draw attention to the fact that in this study, most of the information about breastfeeding was received from health professionals in women with and without GDM. This result in our study was very important in terms of revealing that health professionals were at an important step regarding breastfeeding processes and the self-efficacy of women during pregnancy. National (21, 22) and international (3,8,11,13) studies have revealed the positive effect of breastfeeding education given to women during pregnancy on women's breastfeeding self-efficacy both during pregnancy and the postpartum period. It was reported that breastfeeding education by health professionals and nurses had a positive effect on breastfeeding self-efficacy in the postnatal period (7,14).

In our study, we found a positive relationship between the educational level of high school and above and PBSE in women without GDM, which was in agreement with other studies conducted by Alyousefi et al. (13) and Corby et al. (3). Educational level is an important parameter affecting the awareness of pregnant women about breastfeeding. Pregnant women with higher educational levels were more willing to receive information about breastfeeding and to breastfeed. Because these women were more aware of the benefits of breastfeeding for both mother and baby (4,21,22).

We found a negative relationship between low income level and PBSE in women without GDM. We may associate this result with the lower PBSE of unemployed pregnant women. This was because not working reduced the income level of the person and could negatively affect access to health and social support (9,26-28). Women with low income levels who had problems accessing health care and whose social support was negatively affected also had less access to adequate and accurate information about breastfeeding (7,14), and may have false beliefs about the breastfeeding process and their breastfeeding success could be affected. Therefore, PBSE of low-income pregnant women may have been negatively affected.

In our study, being in the 3rd trimester decreased the PBSE of pregnant women by 10.6 units. It was reported that women's fear of childbirth, anxiety about their babies and themselves, and physical symptoms increased as they approached the end of their pregnancies. It was stated that the interest of pregnant women in the last trimester was focused on the birth process and having a healthy baby (19,20,34). Therefore, in our study, we think that the ambivalent emotional states experienced by pregnant women in the 3rd trimester in this period diverted their attention and negatively affected their PBSE.

The length of previous breastfeeding duration of

pregnant women positively affected PBSE, which was in agreement with other studies conducted by Corby et al. (3) and Salarvand et al. (5). Breastfeeding is an important period that strengthens the mother-baby bond and has numerous benefits for both mother and baby. At the beginning of the breastfeeding process, there may be some problems. However, as breastfeeding continued, the mother's sense of achievement and desire to breastfeed increased and the mother-infant bond was strengthened. Therefore, the length of the breastfeeding process supported positive breastfeeding experiences. Because breastfeeding is a learned behavior (17, 18). Accordingly, the length of the breastfeeding period strengthened the relationship between mother and infant, increased satisfaction, and encouraged repeat breastfeeding. Therefore, we suggest that the length of previous breastfeeding has a positive effect on PBSE.

Limitations and strengths of the study

The strength of our study was that it was the first study to determine PBSE and the factors affecting it in Turkish pregnant women with and without GDM. However, our study had some limitations. The first limitation was that the study was conducted in a single hospital. Another limitation was that the study was conducted only with pregnant women attending the endocrinology policlinic.

Practical implications

Breastfeeding is a very important issue for women during pregnancy and the postnatal period. Education and counseling on breastfeeding by health professionals (especially nurses) and breastfeeding counselors should start during pregnancy and continue in the postnatal period. In this way, women's breastfeeding duration, success, desire, and thus their breastfeeding self-efficacy may increase. In this context, the factors affecting PBSE in all women with and without GDM should be known and taken into consideration when providing education and counseling. In addition, awareness of all health professionals and breastfeeding counselors about PBSE should be increased. In future studies, it was recommended to give structured training on breastfeeding to women with and without GDM starting during pregnancy and continuing in the postnatal period and to conduct experimental or qualitative studies in which women's breastfeeding experiences and changes in self-efficacy are determined.

Conclusions

In conclusion, this study determined the level of PBSE of women with and without GDM and the factors predicting prenatal breastfeeding self-efficacy. In our study, PBSE was high in women with and without GDM, but it was higher in women with GDM. The factors predicting PBSE in women with GDM were employment status, family type, and receiving information about breastfeeding, while the factors predicting PBSE in women without GDM were educational status, employment status, family type, income status, trimester, length of previous breastfeeding and receiving information about breastfeeding. Women need to be assessed comprehensively in terms of breastfeeding self-efficacy both during pregnancy and in the postpartum period.

Ethical Statement & Informed Consent

Ethical approval was obtained from Izmir Katip Celebi University Non-Interventional Clinical Research Ethics Committee (Date: 23.02.2023; IRB: 0058) and permission from the hospital where the study was conducted (Date: 05.04.2023). Permission was obtained from the researchers who conducted the Turkish validity and reliability of the scale used in the study. The purpose, nature, confidentiality, anony - mity and right of women to refuse to participate in the study were explained to the participants. Written and verbal consent was obtained from women with and without GDM who voluntarily agreed to participate in the study and met the inclusion criteria. Informed consent was obtained from all women included in the study. The research was conducted in accor- dance with the Principles of the Declaration of Helsinki.

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