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ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

The Relationship Between Pregnancy Body Mass Index And Delivery Method and Postpartum Depression

Ayça Şolt Kırca[1], Derya Kanza Gül[2]

[1]Kirklareli University School of Health, Midwifery Department Kirklareli-Turkey.

[2]Medipol University School of Medicine Health, Istanbul-Turkey

Ayşe Şolt Kırca

0000-0001-6733-5348

Derya Kanza Gül

0000-0001-8879-9299

Abstract

Aim: This study was carried out to evaluate the relationship between body mass indexes and delivery types of pregnant women and postpartum depression.

Method: The study is descriptive and cross-sectional and involved 164 postpartum women from February to June 2022. Among the inclusion criteria were the age of 20 or older, the fact that one is primiparous or multiparous, having given birth by vaginal birth or cesarean section, and having been in the postpartum period.

Results: The average age of the participants was 29.72±4.37, and the mean body mass index was 27.98±3.68. 54.6% of the participants are university graduates, the income of 83.4% is equal to their expenses, and 68.1% of them do not work in any job.. While there was a statistically significant relationship between income status and social security and depression status, there was no statistically significant relationship between body mass index and delivery type and postpartum depression ($p< 0.05$).

Conclusion: Although there was no association between postpartum depression and delivery type or body mass index, income status and social security did show a relationship.

Keywords: Postpartum Period, Body Mass Index, Mode of Delivery, Depression.

Özet

Amaç: Bu çalışma, gebelerin vücut kitle indeksleri ile doğum şekilleri ile doğum sonrası depresyon arasındaki ilişkiyi değerlendirmek amacıyla yapılmıştır.

Yöntem: Araştırma tanımlayıcı ve kesitsel tipte bir çalışma olarak yapılmıştır. Çalışmanın verileri Şubat-Haziran 2022 tarihleri arasında İstanbul da özel bir hastanenin kadın doğum polikliniklerine doğum sonrası dönemde kontrole gelen ve çalışmaya gönüllü olarak katılan 164 kadın üzerinde yapılmıştır. Araştırmaya dahil edilme kriterleri arasında 20 yaş ve üzerinde olmak, kadınların primipar veya multipar olması, vajinal doğum veya sezaryen ile doğum yapmış olması ve doğum sonrası dönemde olmasıdır.

Bulgular: Katılımcıların yaş ortalaması 29,72±4,37, vücut kitle indeksi ortalamaları ise 27,98±3,68 idi. Katılımcıların %54,6'sı üniversite mezunu, %83,4'ünün geliri giderlerine eşit ve %68,1'i herhangi bir işte çalışmamaktadır. Gelir durumu ile sosyal güvenlik ve depresyon durumu arasında istatistiksel olarak anlamlı bir ilişki bulunurken, beden kitle indeksi ile doğum şekli ve doğum sonrası depresyon arasında istatistiksel olarak anlamlı bir ilişki saptanmamıştır ($p< 0,05$).

Sonuç: Doğum sonrası depresyon ile doğum şekli veya beden kitle indeksi arasında bir ilişki bulunmamakla birlikte, gelir durumu ve sosyal güvence ile doğum sonrası depresyon arasında istatistiksel olarak anlamlı bir ilişki tespit edilmiştir.

Anahtar kelimeler: Doğumsonu dönem, beden kitle indeksi, doğum şekli, depresyon.

Correspondence:
Ayça Şolt Kırca. Associate Professor, PhD.
Postal address: Kirklareli University School of Health, Midwifery Depertmant Kirklareli,
Phone: +90 (539) 268 41 85
Fax: +90 312 587 37 75
E-mail: aycasolt@hotmail.com

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Introduction

Postpartum depression (PPD) is defined as a period of major depression that occurs during pregnancy or within the first four to six weeks after birth (1,2). Postpartum depression is seen between 6.5% and 19% of all healthy new mothers (3,4). According to studies conducted in Turkey, this rate was found to vary between 14.6% and 28.2% (5,6).Postpartum depression is a significant public health problem as it can negatively affect the cognitive and socio-emotional development of the child, and the well-being of family members (4,7,8). Research in the literature on PPD has identified factors such as changes in body shape, unwanted pregnancies, pressure on the mother because of newborn care, body mass index, method of delivery, preeclampsia, postpartum infection, being a mother at a younger age than sociodemographic characteristics, smoking, low income, and education level. (9-13). Another significant factor affecting postpartum depression is obesity (4).

The average weight gain during pregnancy is 12 kg. Weight gain for pregnant women is estimated based on body mass index (BMI). Using this index, a mother's weight is divided into four groups at the beginning of her pregnancy: underweight, normal, overweight, and obese. About 46% of women have weight changes outside the recommended range (14). However, while there is no relationship between BMI and postpartum depression in some studies, it is stated that there is a negative or positive relationship between depression and BMI in some research results. In a systematic and meta-analysis study by Dachew and coworkers, it was found that pre-pregnancy obesity was associated with an increased risk of maternal depressive symptoms both during pregnancy and in the postpartum period (15).

A woman's satisfaction with her birth experience is very important for the health of the woman and the newborn (16). In the literature, it is suggested that the mode of delivery (cesarean section or vaginal delivery) is among the risk factors for the development of postpartum depression. While studies have shown that cesarean section is a potential risk factor for emotional disorders in mothers in the prenatal and postpartum periods (17-19), one study has shown no connection between PPD and the method of delivery (20-21). During the onset of PPD symptoms, the mother is away from home health personnel. Women who become mothers may not notice psycho-social changes during this time when they think they should be happy, or even if they do, they may not be able to express their concerns, believing that this is a common occurrence. For this reason, it is important to inform not only women but also family members about PPD. In addition, midwives and nurses working in the first step should evaluate their psycho-social status when they visit their mothers at home during the postpartum period. A health institution that is able to diagnose and treat PPD early should consult and direct any mother who has not received training on delivery methods during pregnancy, who has had a normal or cesarean delivery, who has had an intervention during normal delivery, or who has had depression during pregnancy.

It has been determined that many factors are associated with PPD in Turkish women (16,22), but no studies have evaluated the effects of body mass index in pregnancy or the mode of delivery (vaginal or cesarean). In this context, the study was conducted in a cross-sectional and descriptive type in order to determine the relationship between body mass index in pregnancy and mode of delivery and postpartum depression in the postpartum period.

The study is a descriptive and cross-sectional study. The study was carried out in the obstetrics and gynecology outpatient clinics of Private X Hospital between February and June 2022. It is located on the European side of Istanbul, has nine obstetrics and gynecology clinics, and has a very high follow-up rate for normal and cesarean delivery, as well as pregnancy and postpartum periods. The number of births (normal and cesarean section) between January 1 and December 31, 2020, in the hospital, is 7000. By using the raosoft program with the sample calculation of the known universe, the amount of Type I error was calculated as 0.05, the power of the test was 0.80 (α= 0.05, 1-β= 0.80), and the minimal sample number was calculated as 161.
(http://www.raosoft.com/samplesize.html).

Inclusion criteria for the study were: being between the ages of 20-40, being primiparous or multiparous, being in the postpartum period, having had a cesarean or normal delivery, being a single pregnancy, and having signed the voluntary consent form.

Exclusion criteria from the study: Having a serious complication or disease that would endanger the pregnancy (DM, hypertension, heart disease, etc.), having an emergency cesarean section, risky delivery, having any problem that prevents communication (illiteracy in Turkish, listening, speaking skills). having a psychiatric disorder diagnosed before pregnancy (anxiety, schizophrenia, panic attack, obsessive-compulsive disorder, manic depressive disorder, bipolar disorder, etc.) and being treated for it (pharmacotherapy, psychotherapy, non-pharmacological methods).

Introductory Information Form: The form was prepared by the researchers based on the information in the literature. In order to determine the form's intelligibility,

15 women in puerperal status were invited to apply to the hospital's obstetrics clinic, and the form was given its final form. The form consists of 22 questions containing information about the socio-demographic characteristics of the woman, her medical and obstetric history, and the woman's current pregnancy (12,16).

Edinburgh Postpartum Depression Scale (EPDS): This scale, (23) which was developed by Cox et al for screening purposes to determine the risk of depression in postpartum women, was adapted into Turkish by Engindeniz et al. The measurement tool consists of 10 items that include the psychological state of the individual in the last seven days. Each item has a four-point Likert scale rated 0-3 (always, generally, rarely, never). The cut-off point of EPDS was calculated as 12/13, and women with a total scale score higher than the cut-off point are considered as the risk group. The total score is between 0-30. A higher total score indicates the severity of depression. In the validity-reliability analysis of the scale, the Cronbach alpha value was found to be 0.79 (24). The Cronbach's alpha value in this study was 0.78 and the cut-off point was 12.

Data Collection Method: Researchers filled out an introductory form and the Edinburgh Postpartum Depression Scale in 15-20 minutes, on average, with pregnant women waiting in the waiting room before the examination, using a face-to-face interview method, with pregnant women who met the criteria for the study.

Ethics

Before data collection for this study, approval was obtained from the Ethics Committee of Y University. Before the research was conducted, written permission was obtained from the chief physician of the Private X Hospital, where the study would be conducted.

Analysis Of The Data

For data analysis, the IBM SPSS V23 (SPSS, Inc., Chicago, IL, USA) was used. The suitability of the data used for normal distribution was tested. The state of having a normal distribution can be examined with the Q-Q Plot plot. In addition, the normal distribution of the data used depends on the fact that the skewness and kurtosis values are between ±3. For normally distributed data, the independent t-test was applied to compare two independent groups, the one-way analysis of variance was applied to compare more than two independent groups, and when there was a difference, Bonferroni was used to identify the two groups from which the difference originated. Pearson correlation was applied to test the relationship between the scales. Median values (minimum-maximum) for non-normally distributed data, mean ± standard deviation for normally distributed data, and frequency (percent) for categorical data were used to present the analysis results. A p-value of < 0.05 was determined to be statistically significant.

Results

When the participants are examined in terms of socio-demographic and determining characteristics; The mean age was 29.72±4.37, the mean height was 164.41±4.04, the mean weight was 75.64±10.44, and the mean BMI was 27.98±3.68. It was determined that 54.6% of the participants were a university, 68.1% had no job, and 83.4% had expenses equal to their income, based on their marriage duration of 1-5 years. It was determined that 99.4% of the participants had health insurance, 90.8% had a nuclear family structure, and 63.2% of them had self-employed spouses (Table 1).

TABLE 1: Distribution of the participants in the study according to their socio-demographic characteristics

Variables		X	SS
Age		29.72	4.37
Height		164.41	4.04
Weight		75.64	10.44
BMI		27.98	3.68
Variables		**n**	**%**
Marriage Duration	1-5 years	101	62.0
	6-10 years	35	21.5
	+ 10 years	27	16.6
Education Background	Elementary	33	20.2
	High School Degree	41	25.2
	Bachelor's Degree	89	54.6
Employment Status	Yes	52	31.9
	No	111	68.1
Income Status	Income less than expenses	7	4.3
	Income equals expenses	136	83.4
	Income more than expenses	20	12.3
Social Security	Yes	162	99.4
	No	1	0.6
Type of Family	Nuclear Family	148	90.8
	Extended Family	15	9.2
Spouse's Occupation	Civil Servant	30	18.4
	Worker	30	18.4
	Self Employment	103	63.2
Total		**163**	**100.0**

Based on the medical and obstetric characteristics of the participants, 36.2% had a health problem during pregnancy, and 63.8% hadn't. Researchers found that 30.8% of women with health problems suffered from nausea and vomiting. When the distribution of the participants according to the delivery types was examined, it was determined that 50.9% of them gave vaginal birth, 49.1% gave birth by cesarean section, 74.2% wanted these pregnancies, and 80.4% went to the controls during pregnancy. According to the distribution of the baby according to how it is fed, 98.2% stated that they fed their babies with breast milk, and 83.4% quoted that there was someone who would assist them after the baby was born (Table 2).

TABLE 2: Distribution of the participants in the study according to their medical and obstetric characteristics

Variables		n	%
Having health problems during pregnancy	Have	59	36.2
	Have not	27	16.6
The problem experienced	Have not	104	63.8
	Nausea-vomiting	50	30.8
	Excessive weight gain	9	5.4
Delivery method	Vaginal	83	50.9
	Cesarean	80	49.1
Desired pregnancy	Yes	121	74.2
	No	42	25.8
Status of going to check ups during pregnancy	Yes	131	80.4
	No	32	19.6
Diet of baby	Only breast milk	160	98.2
	Breast milk and infant formula	3	1.8
The presence of a helping person after the baby is born	Yes	136	83.4
	No	27	16.6
Total		**163**	**100.0**

As a result of comparing the depression status of the participants with their socio-demographic characteristics; a statistically significant difference was found between the income status and social security of participants and their depression status. The duration of the marriage, education, employment and income, family type, spouse's occupation, and depression did not have a significant relationship ($p<0.05$, Table 3).

TABLE 3: Comparison of depression status of the participants in the study according to their socio-demographic characteristics

Variables		Haven't Depression		Have Depression		Total		Test Value	p
		n	%	n	%	n	%		
Marriage Duration	1-5 years	89	61.4	12	66.7	101	62.0	1.927**	0.381
	6-10 years	30	20.7	5	27.8	35	21.5		
	+10 years	26	17.9	1	5.5	27	16.6		
Education Background	Elementary	28	19.3	5	27.8	33	20.2	0.715**	0.700
	High School Degree	37	25.5	4	22.2	41	25.2		
	Bachelor's Degree	80	55.2	9	50.0	89	54.6		
Employment Status	Yes	49	33.8	3	16.7	52	31.9	2.162**	0.141
	No	96	66.2	15	83.3	111	68.1		
Income Status	Income less than expenses	3	2.1	4	22.2	7	4.3	17.704**	0.000*
	Income equals expenses	122	84.1	14	77.8	136	83.4		
	Income more than expenses	20	13.8	0	0.0	20	12.3		
Any Social Security	Yes	145	100.0	17	94.4	162	99.4	8.105**	0.004*
	No	0	0.0	1	5.6	1	0.6		
Type of Family	Nuclear	132	91.0	16	88.9	148	90.8	0.088**	0.766
	Extended	13	9.0	2	11.1	15	9.2		
Spouse's Occupation	Civil servant	26	17.9	4	22.2	30	18.4	0.207***	0.902
	Worker	27	18.6	3	16.7	30	18.4		
	Self employment	92	63.5	11	61.1	103	63.2		
Total		**145**	**100.0**	**18**	**100.0**	**163**	**100.0**		

*p<0.05, **Chi-square analysis

When the relationship between the participants' BMI and Edinburgh Postpartum depression scale was examined by Pearson correlation analysis; it was determined that there was no statistically significant relationship between BMI and the depression status of the participants (r:-0.040, p:0.614). When the depression status of the participants was compared according to their medical and obstetric characteristics; It was determined that there was no statistically significant difference between the medical and obstetric characteristics of the participants and their depression status (p>0.05, Table 4).

TABLE 4: Comparison of depression status according to medical and obstetric characteristics of the participants participating in the study

Variables		Haven't Depression		Have Depression		Total		Test Value	p
		n	%	n	%	n	%		
Having health problems during pregnancy	Yes	51	35.2	8	44.4	59	36.2	0.596**	0.440
	No	94	64.8	10	55.6	104	63.8		
The problem experienced	Have not	94	64.8	10	55.6	104	63.8	2.923**	0.571
	Nausea-vomiting	43	29.6	7	38.8	50	30.8		
	Excessive weight gain	2	1.4	1	5.6	3	1.8		
	Hypertension	3	2.1	0	0.0	3	1.8		
	Rise of the blood sugar level	3	2.1	0	0.0	3	1.8		
Income Status	Income less than expenses	3	2.1	4	22.2	7	4.3	17.704**	0.000*
	Income equals expenses	122	84.1	14	77.8	136	83.4		
	Income more than expenses	20	13.8	0	0.0	20	12.3		
Delivery Method	Vaginal	75	51.7	8	44.4	83	50.9	0.340**	0.560
	Cesarean	70	48.3	10	55.6	80	49.1		
Desired pregnancy	Yes	109	75.2	12	66.7	121	74.2	0.606**	0.436
	No	36	24.8	6	33.3	42	25.8		
Status of going to checkups during pregnancy	Yes	118	81.4	13	72.2	131	80.4	0.851**	0.356
	No	27	18.6	5	27.8	32	19.6		
Diet of baby	Only breast milk	51	35.2	8	44.4	59	36.2	0.379**	0.538
	Breast milk and infant formula	3	2.1	0	0.0	3	1.8		
The presence of a helping person after the baby is born	Yes	122	84.1	14	77.8	136	83.4	0.469**	0.494
	No	23	15.9	4	22.2	27	16.6		
Total		**145**	**100.0**	**18**	**100.0**	**163**	**100.0**		

*p<0.05, **Chi-square analysis

Discussion

There are many physiological, psychological, emotional, and environmental factors that cause Postpartum depression [9-13]. Studies examining the relationship between mode of delivery, body mass index of women, and PPD are rare in the literature [12, 25]. With this study, the mode of delivery and body mass index of women during pregnancy were examined in relation to postpartum depression, and it is thought that the results will contribute to the national and international literature. In terms of socio-demographic, medical, and obstetric characteristics of the participants (age, height, weight, education level, employment status, income level, social security, smoking status, wishing to conceive, mode of delivery, feeding the baby, going to check-ups during pregnancy, the existence of a person caring for the baby after birth) it is crucial for the reliability of the research In terms of these features, the study's results are in line with those of domestic and international research [12,16-19,26].

In this study, postpartum depression levels of women who gave birth by vaginal or elective cesarean section were evaluated, and it was found that there was no statistically significant connection between delivery type and postpartum depression levels. In reviewing the domestic and international literature, it was determined that the EPDS scores of women who gave birth by cesarean section were higher than those who gave birth vaginally, especially in terms of anxiety and depression symptoms [25]. In the study of Ilska et al. (2020) using the Edinburgh Postpartum Depression Scale (EPDS) with 224 women in the early puerperal period, it was determined that the pain felt by women and the occurrence of early postpartum depression changed according to the type of delivery. Especially in the study, it was determined that women who gave birth by emergency cesarean section were at higher risk for PPD than women who gave birth vaginally [12]. In the study of 1010 women, 36.4% scored 13 points or more on the EDPS; women who delivered vaginally and did not have health insurance scored significantly higher on the EDPS [16]. In the study conducted with 350 postpartum women; It was found that 132 women had an EPDS score of ≥10, but parity, mode of delivery (cesarean section), occupation, socioeconomic level, preterm birth, or breastfeeding were not associated with PPD [21]. In the study conducted, it was stated that there was no relationship between the mode of delivery and PPD [20]. In the study conducted by Sabuncuoğlu and Berkem (2006), it was determined that there was no significant relationship between the mode of delivery and EPDS [22]. In the study conducted by Kim and Dee (2018) with 223 Hispanic women, it was found that there was no significant difference between EPDS scores in women who had a cesarean or normal delivery [26]. In studies conducted in the USA and France, it was determined that the mode of delivery did not have a relationship with PPD, and in another study conducted in Sweden, it was determined that the mode of delivery had no direct effect on PPD [37-29]. While the results of the study are similar to the results of the other studies; they are different from other research results. This difference may be explained by the different cultures of the population in which the study was conducted, the region where the study was conducted, the good social support provided to women, as well as the fact that emergency cesarean sections were excluded from the study.

As a result of in the study, no statistically significant differences were found between birth type and body mass index, and postpartum depression, but there were significant relationships between income level and social security, and postpartum depression. Additionally to studies in the literature stating that the birth type and increase in BMI are risk factors for PPD, there are also studies confirming that these variables are not risk factors for PPD.

Limitations

This study was carried out in the Obstetrics and Gynecology outpatient clinic of a private hospital in Turkey. For this reason, it can only be generalized to the female population in this hospital who come for control in the postpartum period. Another limitation of the study is the small sample size. Since participation in the research was carried out on a voluntary basis, this situation caused difficulties in collecting data in the research.

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Conflict Of Interest

The authors have no conflict of interest to declare.

Informatıon

We thank the women who agreed to participate in the study.

Author Contribution

ASK: Project development, manuscript writing, data analysis, literature review, critical review.

DKG: Data collection, data analysis, literature review, critical review.

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