ORIGINAL ARTICLE

Postpartum depression and breastfeeding in overweight/obese and non-obese mothers

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Abstract

Objective: To analyse depression and breastfeeding behaviour of overweight/obese and non-obese primipara mothers during their pregnancy and postpartum period.

Methods: The comparative cross-sectional study was conducted at Afyonkarahisar State Hospital, Afyonkarahisar, Turkey, from September 2016 to February 2017, and comprised three follow-ups of overweight/obese and non-obese pregnant women. Data was collected using a personal identification form, and standard postpartum depression and breast feeding definition scales. SPSS 22 was used for data analysis.

Results: Of the 229 subjects, 110(48%) were overweight/obese and 119(52%) were non-obese. The difference between the two groups was statistically significant regarding the mode of delivery and exclusive breastfeeding ($p<0.05$). Depression scores of overweight/obese mothers were higher in prenatal period, on the postpartum second day and in the postpartum 4th-6th week ($p<0.05$). The breastfeeding scores of overweight / obese mothers were low on the postpartum second day and in the postpartum 4th-6th week ($p<0.05$). There was a negative correlation between depression and breastfeeding scores of all mothers in both prenatal and postpartum periods ($p<0.05$ each).

Conclusion: Health professionals should support obese women because they carry a risk of prenatal and postpartum depression as well as unsuccessful breastfeeding.

Keywords: Breastfeeding, Depression, Obese pregnant, Overweight pregnant. (JPMA 70: 219; 2020)
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Introduction

Obesity is defined as aggregation of too much fat on the body or increase in the ratio of body weight to height. It is becoming a common public health problem in most countries, especially in the developed ones. According to World Health Organisation (WHO) statistics 14% of women and 10% of men in the world were obese.[1] The obesity ratio of women at reproduction ages was 37% in the National Health and Nutrition Examination Survey conducted by Centre for Disease Control and Prevention (CDC) in the United States (USA).[2]

WHO and the National Institutes of Health define weight with body mass index (BMI = weight/(height);[2] underweight = BMI less than 18.5, normal weight = BMI 18.5-24.9, overweight = BMI 25-29.9, and obese = BMI 30 or greater).[1] The gestational weight-gain is the major affecting factor that causes increased obesity ratio in women. WHO declares that the prevalence of obesity in pregnancy is between 1.8% and 25.3% and maternal obesity is a major risk factor for maternal and prenatal mortality.[1]

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Although maternal obesity is an important risk factor for foetal and maternal mortality and morbidity, it is a risk factor for the health of the newborn and the mother in the postpartum period as well.[3,4] Compared to women who have normal BMI, overweight and obese women are under a higher risk of urinary tract infection, hypertension (HTN), preeclampsia and gestational diabetes mellitus (GDM) through the pregnancy period. Also in the postpartum period, they are under a higher risk of wound-site infection, thromboembolism, atonia bleeding, postpartum depression (PPD) and ineffective breastfeeding.[5]

Breastfeeding is considered to be an important factor in assuring the mother of her role, and missing out on it might result in PPD. In literature, 20-29% overweight and obese women could not start breastfeeding.[6,7] Also, their breastfeeding intention and the ratio of exclusive breastfeeding was less compared to women with normal BMI.[6,8] Increasing Caesarean section (CS) ratio, physical movement inability, big breast tissue and delay in lactogenesis II were the most important obstacles in starting and continuing the breastfeeding for overweight and obese mothers.[9,10]

Maternal obesity decreases self-confidence and physical functionality, increases dissatisfaction with body image, affects life quality negatively, and all these elements result

in increased depression rate. If untreated, continuing and reoccurring risk of it will increase and it might cause behavioural problems and delay cognitive skills of the baby.[10,11] However, maternal obesity affects breastfeeding negatively, breastfeeding prevents PPD and maternal obesity.[11,12] The current study was planned to analyse and compare the breastfeeding success and depression level of overweight/obese and non-obese mothers during their pregnancy and postpartum periods.

Patients and Methods

The comparative cross-sectional study was conducted in the obstetric clinic of Afyonkarahisar State Hospital, Afyonkarahisar, Turkey, from September 2016 to February 2017. The hospital has the highest birth numbers in the region. Approval was obtained from institutional ethics committee. Data was collected after written consent was obtained from each participant.

The target population was pregnant mothers who applied for routine prenatal follow-up. The sample size was calculated with the help of sample size calculator with confidence level of 95% and confidence interval (CI) of 5%.[13] Non-probability convenience sampling methodology was used. Those included were primigravida aged >18 years, >37th week in the pregnancy, singleton pregnancy, having no risk for pregnancy except obesity (preeclampsia, GDM, early membrane rupture etc.), having no diagnosed psychological problems, being together with the newborn in the postpartum period, and those who could speak and understand Turkish. The rest were excluded.

WHO criteria[1] was used to segregate the subjects into two groups. Overweight and obese pregnant mothers were placed in group 1, while non-obese pregnant mothers formed group 2.

Data was collected using face-to-face interview with three follow-ups. The first follow-up was conducted in the obstetric polyclinic for the period after the 37th week of pregnancy. The second follow-up was conducted on the postpartum second day (women who completed 24 hours after the childbirth) in the obstetric clinic. The third follow-up was conducted between postpartum 4th and 6th weeks in the clinic.

Data was collected using a personal identification form (PIF), LATCH [("L" = how well the infant latches onto the breast; "A" = the amount of audible swallowing noted; "T" = the mother's nipple type: "C" = the mother's level of comfort; and "H" = the amount of help the mother needs to hold her infant to the breast) Breastfeeding Assessment Scale and the Edinburg Postpartum Depression Scale (EPDS). PIF was developed on the basis of literature to collect data for socio-demographic, obstetric characteristics and breastfeeding.[5,10,12,14-16] The PIF and EPDS were used in the first follow-up, while EPDS and LATCH were used in the second and third follow-up.

LATCH breastfeeding assessment scale it is one of the measurement scale used on breastfeeding evaluation. It was generated in 1986 parallel to Appearance, Pulse, Grimace, Activity, and Respiration (APGAR) score system regarding the method of scoring. It has 5 evaluation criteria. Each criterion scored between 0-2. Maximum score that can be measured from the scale is 10 and higher score means a higher success on breastfeeding.[14] Turkish validity reliability study was conducted by Yenal and Okumus and its Cronbach's alpha score was 0.95.[17] In this study, the Cronbach alpha score was found as 0.80.

EDPS was developed to be used on monitoring depression risk of women in postpartum period.[18] It is widely used to determine the risk of depression in both pregnancy and postpartum period. It is a self-evaluation scale that has 10 questions rated on a four-point Likert scale. The least score in the scale is 0 and the highest score is 30. Turkish validity and reliability study was conducted by Aydin et al. and cut-off score was reported as 12-13. Participants that had a score >13 were accepted in the risky group. Cronbach's alpha score of Aydin et al.'s study was 0.76.[19] In this study, the Cronbach's alpha score was 0.92.

Data was analysed using SPSS 22. Demographic data was evaluated by descriptive analysis in which mean, standard deviation (SD), frequencies and percentages of different variables were calculated. Kolmogorov Smirnov test was used to look up if the data was in normal distribution. Data was not normally distributed so non-parametric tests were used. Mann Whitney U test was used to compare the mean difference in EPDS and LATCH scores between overweight/obese and non-obese mothers. A correlation analysis was conducted to analyse the relation between breastfeeding success and depression level of mothers in pregnancy and postpartum periods in both the groups. $p<0.05$ was considered significant.

Results

Of the 229 subjects, 110(48%) were overweight/obese and 119(52%) were non-obese. There was a significant difference between mothers regarding their mean BMI, birth type and exclusive breastfeeding (Table-1). EPDS score of overweight/obese mothers in prenatal period, postpartum second day and postpartum 4th-6th week was significantly higher compared to non-obese mothers ($p<0.05$). LATCH score of overweight/obese mothers in

Table-1: Characteristics of mothers (N=229).

	Overweight/Obese Mothers (n=110) Mean (SD)	Non-obese Mothers (n=119) Mean (SD)	Significance
Mean age (year)	25.64 (3.14)	25.95(5.78)	t=0.744 p=0.458
BMI mean (kg/m^2)	29.33 (1.49)	21.79 (0.73)	t=-49.134 p=0.000
Birthweight of the baby (gram)	3089.71 (879.45)	3129.65 (444.84)	t=0.431 p=0.667
Baby's weight at postpartum 4th-6th week (gram)	3903.84 (907.62)	3961.75 (471.28)	t=0.586 p=0.558
	n (%)	**n (%)**	
Educational Status			
Primary school	6(5.5)	7 (5.9)	x^2=0.426
High school	50(45.5)	49 (41.2)	p=0.808
University	54(49.0)	63 (52.9)	
Employment Status			
Employed	48 (43.6)	62 (52.1)	x^2=1.641
Unemployed	62 (56.4)	57 (47.9)	p=0.200
Social Support			
Yes	7(6.4)	7 (5.9)	x^2=0.023
No	103 (93.6)	112 (94.1)	p=0.879
Type of birth			
Caesarean section	58 (79.7)	35 (19.2)	x^2=12.884
Vaginal birth	52 (15.8)	84 (72.1)	p=0.000
Exclusively breastfeeding			
No	73 (66.4)	19 (16.0)	x^2=60.406
Yes	37 (33.6)	100 (84.0)	p=0.000

SD: Standard deviation
BMI: Body mass index.

Table-2: The Edinburg Postpartum Depression Scale (EPDS) and LATCH scores of mothers.

	Overweight/Obese Mothers (n=110) Mean (SD)	Non-obese Mothers (n=119) Mean (SD)	z/ *p* Value
LATCH score in postpartum second day	5.32 (1.84)	9.00 (1.29)	z=-11.211 p=0.000
LATCH score in postpartum 4-6th week	5.66 (2.30)	9.66 (0.84)	z=-11.464 p=0.000
Prenatal EPDS score	6.29 (3.01)	1.94 (0.99)	z=-6.645 p=0.000
EPDS score in postpartum second day	8.18 (4.83)	2.50 (1.79)	z=-7.389 p=0.000
EPDS score in postpartum 4-6th week	13.26 (7.63)	2.60 (1.88)	z=-8.904 p=0.000

SD: Standard deviation, z: Mann Whitney U test value
LATCH: "L" = how well the infant latches onto the breast; "A" = the amount of audible swallowing noted; "T" = the mother's nipple type; "C" = the mother's level of comfort; and "H" = the amount of help the mother needs to hold her infant to the breast.

Table-3: Correlation between Edinburg Postpartum Depression Scale (EPDS) and LATCH scores.

		Postpartum second day EPDS score	Postpartum 4th-6th week EPDS score	Postpartum second day LATCH score	Postpartum 4th-6th week LATCH score
Overweight/Obese Mothers	Prenatal EPDS score	r=0.833	r=0.711	r=-0.412	r=-0.363
		p=0.000	p=0.000	p=0.000	p=0.000
	Postpartum second day EPDS score		r=0.815	r=-0.481	r=-0.454
			p=0.000	p=0.000	p=0.000
	Postpartum 4th-6th week EPDS score			r=-0.555	r=-0.523
				p=0.000	p=0.000
	Postpartum second day LATCH score				r=0.743
					p=0.000
Non-obese mothers	Prenatal EPDS score	r=0.810	r=0.552	r=-0.176	r=-0.072
		p=0.000	p=0.000	p=0.060	p=0.461
	Postpartum second day EPDS score		r=0.707	r=-0.349	r=-0.254
			p=0.000	p=0.000	p=0.008
	Postpartum 4th-6th week EPDS score			r=-0.506	r=-0.438
				p=0.000	p=0.000
	Postpartum second day LATCH score				r=0.547
					p=0.000

LATCH: "L" = how well the infant latches onto the breast; "A" = the amount of audible swallowing noted; "T" = the mother's nipple type : "C" = the mother's level of comfort; and "H" = the amount of help the mother needs to hold her infant to the breast.

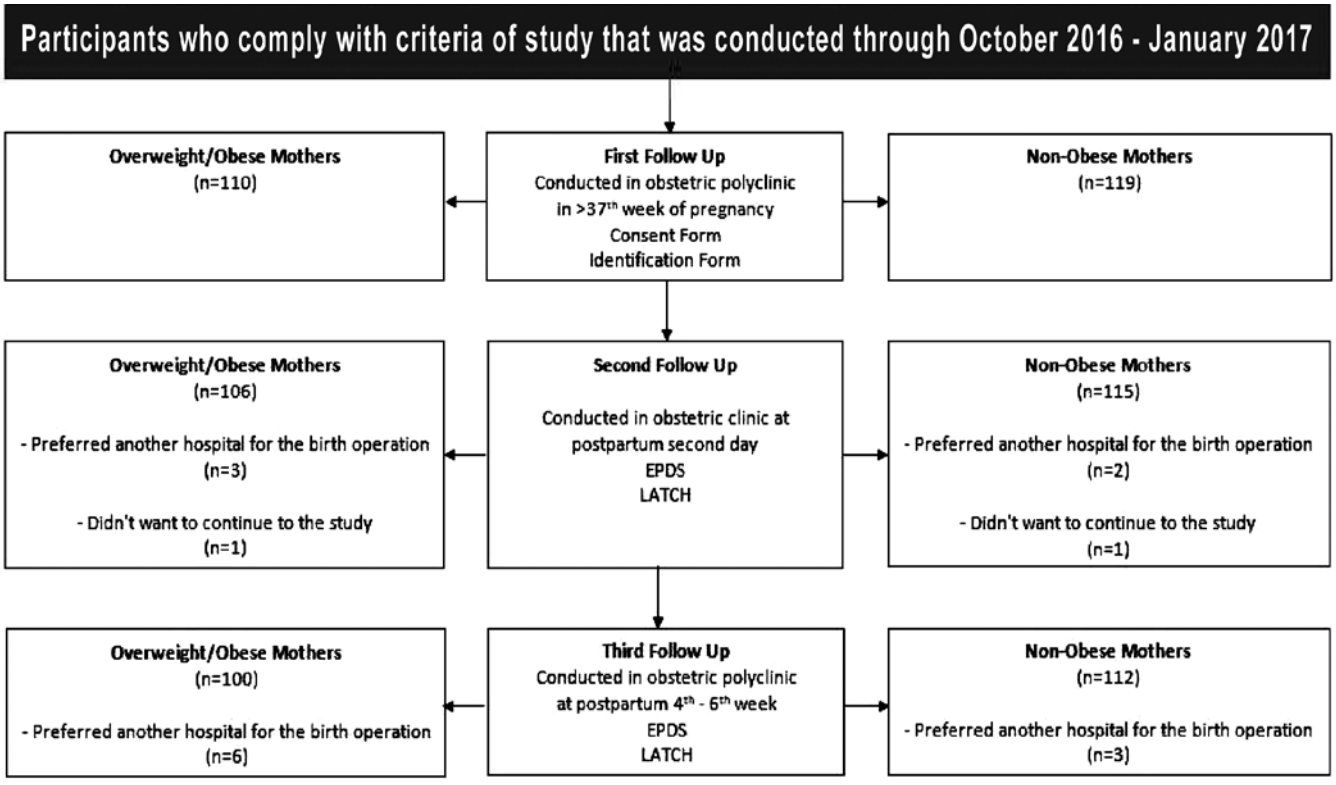

Figure: Flow diagram of the study.

the postpartum second day and postpartum 4th-6th week was lower compared to non-obese mothers (p=0.000) (Table-2).

Of the 110 overweight / obese subjects, 10(9%) were lost to follow-ups and the corresponding number among 119 non-obese mothers was 7(5.9%). Overall, Those who

completed the study were 212(92.5%); 100(47%) overweight / obese, and 112(53%) non-obese (Figure).

A strong correlation was found between the EPDS score of overweight/obese mothers in prenatal period and on the postpartum second day and postpartum 4th-6th week (p=0.000). Also, a strong positive correlation was found between their EPDS score of on the postpartum second day and postpartum 4th-6th week. In non-obese mothers, a strong correlation was found between the EPDS score of mothers in prenatal period and on the postpartum second day. The correlation between the EPDS score of non-obese mothers in prenatal period and in the postpartum 4th-6th week was positive at medium level. In non-obese mothers, a strong positive correlation was found between the EPDS score of women on the postpartum second day and in the postpartum 4th-6th week ($p<0.05$). A strong positive correlation was found between the LATCH score of overweight/obese mothers on the postpartum second day and postpartum 4th-6th week. However, this correlation in non-obese mothers was found to be at medium level ($p<0.05$). In overweight/obese mothers, a negative weak correlation was found between the EPDS score in prenatal period and LATCH score on the postpartum second day and postpartum 4th-6th week ($p<0.05$). Also, a weak negative correlation was found between the EPDS score on the postpartum second day and LATCH score on the postpartum second day and postpartum 4th-6th week ($p<0.05$). Finally, there was medium negative correlation between the EPDS score in the postpartum 4th-6th week and LATCH score on the postpartum second day and postpartum 4th-6thweek ($p<0.05$). In non-obese mothers, a weak negative correlation was found between EPDS score on the postpartum second day and LATCH score on the postpartum second day and postpartum 4th-6th week ($p<0.05$). In this group, the medium negative correlation between the EPDS score in 4th-6th week of postpartum and LATCH score on the second day of postpartum was found, where it was weak for LATCH score in the postpartum 4th-6th week ($p<0.05$) (Table-3).

Discussion

It was found in the study that the income level of overweight/obese mothers was less compared to non-obese mothers and their caesarean birth ratio was higher. Studies have shown that low income level is related to maternal obesity[15,20] and with increased caesarean ratio.[5,16,21,22] The current suggests that low income level is related to malnutrition and sedentary lifestyle and it was effective on not only BMI in pre-pregnancy but also weight-gain in pregnancy. Caesarean birth was preferred more in overweight/obese women because of some risks such as post-term birth, longer birth activity compared to non-obese women.

In the current study, EPDS score of overweight/obese mothers was higher compared to non-obese mothers both in prenatal and postpartum period. In literature, depressive symptoms both in pregnancy and in the postpartum period of overweight/obese women was declared to be more compared to non-obese women[11,12] and it was stated that gestational weight-gain was a factor increasing anxiety.[23] Our results are in line with these studies.

The current study found that overweight/obese mothers' LATCH score on the postpartum second day and postpartum 4th-6th week was less compared to non-obese mothers. Literature, similarly, found that the ratio of early give-up in breastfeeding was higher, the breastfeeding intention and the ratio of feeding with exclusive breastfeeding was lower in women with higher BMI.[6-10,24] Maternal obesity was thought to be a risk factor regarding the negative breastfeeding results.[25] In maternal obese women, breastfeeding in early postpartum period is related to mechanical factors and delay in lactogenesis II, and in the late period it is related to hormonal imbalance, psychosocial factors and breast hypoplasia.[26] Obesity increases progesterone level and blunt prolactin, and this results in delay in lactogenesis. Also, increased caesarean birth risk as a complication of obesity is a factor in the delay of lactogenesis.[27,28] Similar results were found in the current study as well.

The current study found that negative breastfeeding behaviour of overweight/obese mothers was related with their increased depression risk. Maternal depression observed in postpartum period affects learning of parenting role negatively and affects the relationship between the mother and the newborn, affecting baby-care and breastfeeding. As noted in literature, maternal depression in postpartum period results in negative mood states such as lack of self-confidence, anxiety and reluctance, resulting in negative breastfeeding conditions.[11,12,23,26] In the current study, the relation between maternal depression in the postpartum period and negative breastfeeding behaviour of overweight/obese mothers was thought to be the result of these factors.

There were some limitations to the current study. Depression levels of the subjects were based on their own declarations. Also, there were dropouts during the follow-up even though all the subjects had started voluntarily. The research was conducted at a state hospital in Afyonkarahisar, and the results cannot be generalised to

the whole of Turkey.

Conclusion

Breastfeeding success of overweight/obese mothers was lower and their maternal depression risk was higher compared to non-obese mothers. The increase of maternal depression risk was correlated with lower breastfeeding success.

Disclaimer: The text is part of a Master's thesis, and was included in an Oral Presentation at the International & National Women's Health Nursing Congress, March 23-24, 2018, in Istanbul, Turkey.

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