EFFECTIVE FACTORS IN POSTPARTUM WEIGHT LOSS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Objective: To determine the effective factors in postpartum weight loss.

Methodology: We prepared a cross-sectional study in one of educational hospitals (Fatemieh's Hospital) in Hamadan city in the west of Iran. Two hundred women were included in this study. Weight and body mass index was measured in pre-pregnancy state and again at 6 months postpartum. Effective factors in postpartum weight loss were assessed. The questionnaire included age, education, employment, parity, doing exercise, type of delivery, newborn weight and BMI at 6 months after delivery.

Results: Mean age of study participants was 23.3±5.21 years and mean parity was 1.62±0.7. The overall average BMI was 24.2±3.3 before pregnancy and 25.5±3.4 six months after delivery. Pregnant women had an increase in weight of 12.1±3.5 kg and mean weight loss was 6.2 ± 2.9 kg at six months postpartum. Multiple regression analysis revealed that age was having p value 0.001, parity (p value 0.005), height (p value 0.01), gestational weight gain (p value 0.001), pre pregnancy BMI (p value 0.001), type of delivery (p value 0.03) and exercise (p value 0.04).

Conclusion: Parameters such as age, parity, exercise, type of delivery, height and gestational weigh gain were significantly associated with postpartum weight loss.

Key Words: Body mass index, Postpartum, Weight loss

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INTRODUCTION

Obesity and overweight are reaching epidemics worldwide and are more frequently seen in women than men[1]. Intense research is going on the associated risks and effects on the daily life of obese people[2-4].

Obesity in women is associated with pre-eclampsia, increased weight gain during pregnancy, risk to the fetus, some cancers, type 2 diabetes mellitus, early menopause and health problems[5-10]. Women, more than 20 years old, were found to have prevalence of obesity of 35.1%[11].

Due to maternal weight retention during pregnancy, it is considered a risk factor for development of weight gain and obesity in postpartum period[12]. The effective factors for postpartum weight loss are shown to be age, parity, and pre-pregnancy body mass index (BMI)[13,14]. Although most women return to weight of their pre-pregnancy, however 15-20% retains more than 5kg weight in postpartum period[15,16]. This study was carried out to determine association between effective factors and weight loss at six months postpartum.

METHODOLOGY

We prepared a cross-sectional study during 6 month after delivery in one of educational hospitals (Fatemieh's Hospital) in Hamadan City in the west of Iran. Weight and body mass index was measured in pre-pregnancy state and again at 6 months postpartum. Two hundred women were included in this study. Effective factors in postpartum weight loss were assessed. The questionnaire included age, education, employment status, parity, pre-pregnancy BMI, weight gain, doing exercise, type of delivery, newborn weight and BMI at 6 months after delivery.

We performed a pilot study on 25 postpartum women. For a power of 0.80, power analysis showed that 190 participants would be needed considering a 5% loss to follow up, a sample size of 200 women was taken. This research was approved by the Ethics Committee of Hamadan University of Medical Sciences. Informed consent was obtained from all women. 350 postpartum women that had delivered from March 2015 until June 2015 were listed. From the list 200 women systematically at random were selected.

Inclusion criteria consisted of women who at six months postpartum are not pregnant and have alive babies. Exclusion criteria consisted of women who not enabled to return for follow up.

There is Pre-pregnancy BMI in records of health centers that women returned for receiving health services before pregnancy. These were explored by one of authors. "BMI is weight in kilograms divided by the square of the height in meters. BMI is divided into underweight (<18.5 kg/m^2), normal weight (18.5-24.9 kg/m^2), overweight (25-29.9 k/m^2) and obese (≥30 kg/m^2)"[6].

SPSS Version 16.0 was used for statistical analyses. Multiple regression analysis was performed to determine the relationship between maternal factors and weight loss at 6 months after childbirth. Chi square test was conducted for comparison the noncontiguous variables. Effective factors were studied for significance. We considered P-values of <.05 as statistically significant.

RESULTS

Two hundred women were included in this study. They had a mean age of 23.3 ±5.21 years, mean parity 1.62 ±0.7, and most of them were post graduates (69.5%) and not employed (81.5%) . The mean of newborn's weight was 3225.5 ±476.4 (table 1).

The overall average BMI was 24.2 ±3.3 before pregnancy and 25.5 ±3.4 six months after delivery. Pregnant women had an increase in weight of 12.1±3.5 kg and mean weight loss was 6.2±2.9 kg at six months post-

Table 1: Demographic and clinical characteristics of the study sample according to pre-pregnancy BMI (n=200)

Variable	BMI (Kg/m2)					
	<18.5 (n=10) N (%)	18.5-24.9 (n=134) N (%)	25-29.9 (n=44) N (%)	≥30 (n=12) N (%)	Total (n=200) N (%)	P value
Age (yrs)						
< 20	2 (20.0)	4 (3.0)	1 (2.3)	0	7 (3.5)	0.001
20-30	6 (60.0)	89 (66.4)	15 (34.1)	5 (41.7)	115 (57.5)	
>30	2 (20.0)	41 (30.6)	28 (63.6)	7 (58.3)	78 (39.0)	
Education						
Primary school	2 (20.0)	4 (3.0)	4 (9.1)	0	10 (5.0)	0.21
Under graduate	2 (20.0)	24 (25.4)	12 (27.3)	3 (25.0)	51 (25.5)	
Post graduate	6(60.0)	96 (71.6)	28 (63.6)	9 (75.0)	139 (69.5)	
Employed						
yes	0	29 (21.6)	7 (15.9)	1 (8.3)	37 (18.5)	0.24
No	10 (100.0)	105 (78.4)	37 (84.1)	11 (91.7)	163 (81.5)	
Parity						
1	7 (70.0)	76 (56.7)	16 (36.4)	4 (33.3)	103 (51.5)	0.005
2	2 (20.0)	51 (38.1)	16 (36.4)	6 (50.0)	75 (37.5)	
≥ 3	1 (10.0)	7 (5.2)	12 (27.3)	2 (16.7)	22 (11.0)	
Exercise						
yes	6 (60.0)	77 (57.5)	29 (65.9)	8 (66.7)	120 (60.0)	0.04
No	4 (40.0)	57 (42.5)	15 (34.1)	4 (33.3)	80 (40.0)	
Type of Delivery						
Vaginal Delivery	8 (80.0)	73 (54.5)	22 (50.0)	3 (25.0)	106 (53.0)	0.07
Cesarean Section	2 (20.0)	61 (45.5.0)	22 (50.0)	9 (75.0)	94 (47.0)	
Newborn weight (gr)						
< 2500	0	6 (4.5)	1 (2.3)	1 (8.3)	8 (4.0)	0.01
2500-4000	9 (90.0)	123 (91.8)	43 (97.7)	11 (91.7)	186 (93.0)	
> 4000	1(10.0)	5 (3.7)	0	0	6 (3.0)	

BMI, body mass index

Table 2: Gestational weight gain and weight loss at six months postpartum according to pre-pregnancy BMI (n=200)

Variable	BMI (Kg/m2)					
	< 18.5 (n=10) N (%)	18.5-24.9 (n=134) N (%)	25-29.9 (n=44) N (%)	≥ 30 (n=12) N (%)	Total (n=200) N (%)	P value
Gestational weight gain (Kg)						
< 5	0	3 (2.2)	0	0	3 (1.5)	0.001
5-10.9	2 (20.0)	50 (37.4)	17 (38.7)	6 (50.1)	75 (37.5)	
11-15.9	6 (60.0)	57 (42.6)	21 (47.7)	5 (41.6)	89 (44.5)	
≥ 16	2 (20.0)	24 (17.8)	6 (13.6)	1 (8.3)	33 (16.5)	
Weight loss at 6 months postpartum(Kg)						
< 5	2 (20.0)	34(25.4)	10 (22.7)	4 (33.3)	50 (25.0)	0.04
5-10.9	6 (60.0)	89 (66.4)	32 (72.7)	8 (66.7)	135 (67.5)	
11-15.9	1 (10.0)	9 (6.7)	2 (4.5)	0	12 (6.0)	
≥ 16	1 (10.0)	2 (1.5)	0	0	3 (1.5)	

Table 3: Effective factors of weight loss at six months postpartum

Variable	Un standardized coefficients		Standardized coefficients		P value
	B	Std. Error	B	T	
Age (yrs)	0.196	0.099	0.167	1.097	0.001
Education	0.065	0.091	0.057	0.713	0.47
Employment	0.066	0.118	0.039	0.56	0.57
Parity	0.15	0.077	0.173	1.95	0.04
Height (m)	0.018	0.007	0.163	2.44	0.01
Gestational Weight Gain (kg)	0.018	0.05	0.09	1.40	0.000
Type of Delivery	0.198	0.092	0.151	2.157	0.03
Exercise	0.059	0.095	0.045	0.624	0.001

Model: F=11.137, P= 0.000, R^2= 0.318

partum. 150 (75.0%) had weight retention of >5 kg. Gestational weight gain and weight loss at six months postpartum is shown in table 2.

Multiple regression analysis revealed that age was having p value 0.001, parity (p value 0.005), height (p value 0.01), gestational weight gain (p value 0.001), pre-pregnancy BMI (p value 0.001), type of delivery (p value 0.03) and exercise (p value 0.04) (table 3).

DISCUSSION

This study showed that there was significant relationship between maternal factors and weight loss at 6 months after childbirth. The maternal factors included age, parity, height, gestational weight gain, pre-pregnancy BMI, type of delivery (table 3). This study showed that maternal weight retention during pregnancy was a risk factor for development of weight gain and obesity in postpartum period.

Althuizen et al in reported that exercise, caloric intake, sleep, weight gain during pregnancy, and level of education are significantly associated with postpartum weight gain[17,18]. Other studies indicate that weight retention during pregnancy was the main predictor of postpartum weight changes[14,19-22]. Several previous studies confirmed that women with high parity desired to have decrease in weight in the postpartum period[15,23].

CONCLUSION

Age, parity, exercise, type of delivery, height and gestational weigh gain were significantly associated with postpartum weight loss.

RECOMMENDATIONS

We propose to develop effective interventions for women regarding gestational weight gain such as educational programs and exercise classes.

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CONTRIBUTORS

EJ conceived the idea, planned the study, and drafted the manuscript. MN and FS helped acquisition of data and did statistical analysis. All authors contributed significantly to the submitted manuscript.