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The Effect of Exclusive Breastfeeding on Post-partum Weight Loss, Iran.

Fatemeh Shobeiri[1], Mahtab Sattari[2]*, Fatemeh Kalhori[2], and Mansour Nazari[3].

[1]Mother & Child Care Research Center, Hamadan University of Medical Sciences, Hamadan, Iran.
[2]M.Sc. Student of Midwifery, Students Research Center, Hamadan University of Medical Sciences, Hamadan, Iran.
[3]Associate Professor of Entomology, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran.

ABSTRACT

Breastfeeding infants in the first year after birth can help to reduce mother's weight. The aim of this study was to determine the effect of breastfeeding on postpartum weight loss up to six months after delivery, Hamadan city, Iran, 2014. This study was prospective cohort with 200 women who had recently given birth and on care for postpartum were referred to health centers in Hamadan city, 2014. Sampling method was cluster. After obtaining consent from the mothers, questionnaires was completed and mother's weight were recorded the end of the first to six months after delivery. All the statistical analyses were performed using SPSS/16, P values of 0.05 or less were considered statistically significant. The mean and standard deviation of pre-pregnancy BMI and weight gain during pregnancy were 24.2±3.3 Kg/m2 and were 12.1±3.5 kg, respectively. Mother's weight decreased 6.24±2.95 kg at the end of the sixth month of postpartum. In this study, the variables such as exercise, weight before pregnancy, BMI before pregnancy, weight gain during pregnancy were significantly more effective in reducing weight ($p<0.05$). Mothers who have exclusive breastfeeding during six months after the birth had a good weight loss after this period.

Keywords: Exclusive Breastfeeding, Weight loss, Iran

Corresponding author

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INTRODUCTION

Obesity is one of the Sanitary assemblies problems. About 65 million women in America are obese or overweight and this figure is increasing. Un healthy eating habits and life immobile, a major cause of this problem and the health of people in all age groups threatened, especially women and if pregnancy occurs, many risks will follow such as hypertension and diabetes. Moderate weight gain during pregnancy could reduce infant mortality, it also makes The average birth weight (1). Obesity and overweight are common preventable risk factors of non communicable diseases. Persistence obesity can lead to metabolic abnormality including dyslipidemia, dysglycemia, and hypertension and procoagulant state. The cluster of these conditions is immediate initiator of cardiovascular diseases and type 2 diabetes (2).

Breastfeeding is nationally promoted as the ideal method of infant nutrition due to its numerous benefits to mothers, children, and communities.

According to the United Nations Fund for Children, optimal infant breastfeeding should be initiated within the first hour of birth, then exclusive breastfeeding continues for 6 months, and appropriate complementary feeding will commence after the 6^{th} month together with breastfeeding for at least 2 years(3) In fact, long-term breastfeeding depends on exclusive breastfeeding initiation in early postpartum. It is widely recognized that breastfeeding is a learned skill because breastfeeding is not a single suckling action but a series of behaviors which depends on the integrated coordination between mothers and infants (4,5). Although breastfeeding is a natural phenomenon, successful breastfeeding can be a complex task for the mother-infant dyad. Several factors can be used to measure breastfeeding effectiveness, including the mother's correct positioning of her infant at the breast, her comfort level, type of nipple, infant feeding techniques, such as rooting, latching, active sucking, and audible swallowing. (6) Breastfeeding saves the lives of more than half a million infants a year and millions of infants are protected from preventable common diseases. Breast-feeding fortify Mother-child relationships and it plays an important role in maternal health by reducing maternal mortality caused by hemorrhage, reduce the risk of breast and ovarian cancer and osteoporosis (3).

The point is equally surprising is that a woman after childbirth and breastfeeding almost completely returns to its pre-pregnancy state. Subcutaneous fat of the abdomen, back and upper thigh gradually increases during pregnancy and lactation, and it is stored as an energy source (5). Most women 6 months after delivery are close to the surface of weight before pregnancy they had already mentioned, but they still faced with on average 1.4 kg weight gain (7). Breast milk not only stimulating weight loss but also it is the best source of nutrition for infants. In addition, increasing the frequency and duration of breastfeeding is effective in weight loss Between 6-12 months after delivery, The mother's age, number and spacing of pregnancies in Multifarious women is effective in weight loss after pregnancy.

According to research carried out, and the white nulliparous women lose more weight in the early postpartum. The milk production, reserves the mother's diet during pregnancy has been saved for this purpose in her body consumed and prevents obesity in the mother and the mother helps to provide better (8).

A study was conducted by Samoan et al., in Mexico City in 2013 showed that those mothers who were exclusively breast feeding lost more weight than those who did not breast feeding. Gestational weight gain, duration of EBF, and recovery menstruation were described in change in postpartum maternal weight. (9)

Weight gain in pregnancy if the mother's milk during one year is lost by having a balanced diet and maternal pre-pregnancy weight of returns. If the mother is trying to lose weight faster. This effort makes him nervous and not providing enough milk for infants (10).

A study conducted in Brazil by Kointinho and colleagues showed that in a sample of 793 test subjects primiparous women relationship between the losses of about 300 grams with each month of breastfeeding was dominant for all levels of BMI (11). Mothers who are breastfeeding their children because of their stored fat during pregnancy to make milk more quickly lose their excess weight and breast and shame the same reason earlier to normal before the pregnancy is (8). The most important effect of breastfeeding on the mother does not have proper nutrition, is that produced less milk. This occurs for mothers who diet weight loss are serious and want to breastfeed their babies. For weight loss to breastfeeding is emphasized because the mother can decrease its fat reserves with breast-feeding, no serious effects on milk production. One study

showed that mothers who are breastfeeding can reduce week 1 kg. Women who were skinny and want to restrict their energy intake, decreased milk production are at risk (6). The study was conducted by Brandhagen and colleagues in Sweden in 2013 at 36 months of exclusive breastfeeding, especially 0-6 months after delivery, the results showed that exclusive breastfeeding was significantly lower with weight maintenance has been linked. Per month, full breastfeeding, maternal weight up to 0.5 kg per month was reduced. This study supports the hypothesis that exclusive breastfeeding reduces postpartum weight will be supported (14). Breastfeeding women who consume a balanced diet in the first 4 to 6 months of breastfeeding lose their weight from 0.5 to 1 kg in month, however, Almost 20% of women during this period did not reduce their weight. Mothers can have 0.5 kg weight loss in week, have no impact on the volume of milk. Breastfeeding women who was high their body mass index before pregnancy or those who want to lose weight faster, the average increase in physical activity is more acceptance compared with caloric restriction. Rapid weight loss should not be recommendation because of reducing the volume of milk. During lactation and generally 4 to 6 weeks postnatal weight loss drugs and liquid diet is not recommended. The average time to return to the weight before pregnancy is five months (15). The aim of this study was to determine the effect of exclusive breastfeeding on postpartum weight loss up to six months after delivery, Hamadan city, Iran.

MATERIALS AND METHODS

In this prospective cohort study, 200 women were collected for 6 months postpartum referred to health centers in Hamadan city, Iran, 2014. It was a multi-stage cluster sampling method. Out of 30 health centers in Hamadan city, 13 health centers in the north, south, east, west and central were selected. From each center 16 women who had delivered according to quota sampling were recruited. All relevant information was collected by interviewing and using a standardized validated questionnaire including demographic characteristics, marital state, Parity, Type of delivery, occupational condition, anthropometric parameters, and educational level in the initial postpartum month. Self-reported height and weight were assessed and body mass index (BMI) was calculated as pre pregnancy BMI based on weight (kg)/height^2 (meters). Participating women were followed up for 6 months postpartum.

Inclusion criteria include: Women who had a gestational age ≥37 weeks; exclusive breastfeeding, do not use formula, not pregnant, do not use drug and did not report any chronic non-communicable disease. We excluded women who had irregular attendance to measure weight during the fallow -up period.

Postpartum weight variation was considered the response variable in this study. It was defined as the differences between the weights measured at the various potpartum phases of follow-up (1, 2, 3, 4, 5 and 6 months). The mother's weight and height were measured at the hospital after delivery, and subsequently measurements were obtained at 1, 2, 3, 4, 5 and 6 months postpartum at the selected health centers.

Weight was measured using a microelectronic scale (Seca, model A) with a 150-kg capacity and height was measured using a portable stadiometer (Leicester Height Measure); weight and height were measured to the nearest 0.100 g and 0.1 cm, respectively.

Breastfeeding was classified based on WHO criteria as exclusive, when maternal milk was the only food source offered to the child; predominant, when breast milk was the only dairy food source, but water, tea, and juice were also offered to the child; and partial, when breast milk was combined with other types of milk, and possibly other foods. When breast milk was the only dairy source but was combined with other foods, it was considered complementary breastfeeding (16). The study was performed according to the Helsinki declaration protocol. The objectives of the study were explained to the women, and informed consent was obtained from all participants. Women could leave the study at any time. The study was approved by the Ethical Committee of Hamadan University of Medical Sciences. Data Processing and statistical analysis were performed using SPSS/ 16.0. For data analysis, descriptive statistics, frequency tables and multiple regression model were used. P values less than 0.05 was considered statistically significant.

RESULTS

The results revealed that the highest frequency in the age group 20-30 years for women (57.5%) and upper secondary education (69.5%), respectively. Sixty seven percent of women had BMI 18.5-24.9 Kg/m^2. 60% of women exercise performed, about 81 percent of them were housewives. Nearly 51% of mothers were

primiparous. Most of them had vaginal delivery (53%) (Table 1). Mean and standard deviation for height and weight before pregnancy were 162.1± 6.1 cm and 63.2 ± 3.5kg, respectively. The mean and standard deviation were reported for weight gain during pregnancy 12.1 ± 3.5 kg and mean BMI before pregnancy 24.2 ± 3.3 (Kg /m2). The results showed that the mean and standard deviations of weight loss during the 6 months for each month is specified in Table 2. Mean and standard deviation weight loss at six months postpartum 6.24 ± 2.95 kg. Multiple regression analysis on effective factors in reducing maternal weight at the end of the sixth month after delivery is shown in Table 3,according to which variables such as age, parity, BMI before pregnancy, weight gain during pregnancy and exercise a significant influence on weight reduction ($p<0.05$). A pre-pregnancy BMI and exercise had the greatest effect. As shown in figure 1, the linear relationship between BMI before pregnancy and the baby's weight, thus increasing maternal BMI, birth weight also increased. Multiple regression analysis was carried out as follows: variable interest rate of maternal weight loss at the end of the sixth month after delivery (continuous response variable). Predictive variables were; age, education, occupation, height, parity, mode of delivery, BMI before pregnancy, weight gain during pregnancy and exercise. It should be noted that all samples had exclusive breastfeeding.

DISCUSSION

Overweight and obesity are currently among the major global health problems. According to the World Health Organization (WHO), obesity prevalence has doubled from 1980 to 2008, affecting 10% of men and 14% of women worldwide. Higher prevalence of obesity was observed among women than among men in all regions included in the offices of the WHO, including those in Africa, Southeast Asia, and the Eastern Mediterranean (10).

Program to promote breastfeeding, health, physical and mental health provides children with the aim of providing, maintaining and improving health, reducing the burden of disease, mortality and improving their nutrition through the provision of health services. The aim of national and international programs, increase the number of nursing mothers and duration of exclusive breastfeeding along with complementary foods until 6 months of age and continued until the end of 2 years of age (17). Based on the results obtained after weighing mothers who had exclusive breast feeding at the end of each month (1. 2, 3, 4, 5, and 6) postpartum, the first month until the end of the sixth month after delivery, maternal weight loss at the end of the month it was observed that the mean and standard deviationof weight loss during the six months 6.24± 2.95 kg. Exclusive breast-feeding mother has been effective in reducing weight. The study variables such as exercise, weight before pregnancy, BMI before pregnancy and weight gain in pregnancy, significantly effective in reducing weight after delivery ($p<0.05$).The results based on the reduction of maternal weight after exclusive breast feeding in this study based on studies Samano and colleagues in Mexico City in 2013 and Brandhagen and colleagues in Sweden in 2013 were carried out is that both variable weight before pregnancy and BMI before pregnancy was effective in reducing maternal weight ($p =0.001$) (9, 14).The results of both studies are based on weight loss breastfeeding exclusively. The results Monteiro and colleagues study in 2013 show that there is a link between weight gain during pregnancy and weight loss were mothers ($p<0.001$) (10).The results of this study, the average weight loss at the end of each month, show that there is a relationship between breastfeeding and weight loss, the results are consistent with another studies (11,12).

A study carried out by Brandhagen et al., in 2014 in Norwegian mothers. This study evaluate relationship between breastfeeding and maternal weight changes during the 36 months after childbirth. Longer duration of full breast-feeding as well as partial breast-feeding was significantly related to lower weight retention at 6 months. At 18 months full breast-feeding (0-6 months) and partial breast-feeding for 12-18 months were significantly related to lower weight retention. At 36 months only full breast-feeding (0-6 months) was significantly related to lower weight retention. For each additional month of full breast-feeding, maternal weight was lowered by 0·50 kg/month at 6 months, 0·10 kg/month at 18 months and 0·14 kg/month at 36 months (adjusted for pre-pregnant BMI, pregnancy weight gain, age and parity). Partial breast-feeding resulted in 0·25 kg/month lower maternal weight at 6 months. Interactions were found between household income and full breast-feeding in relation to weight retention at 6, 18 and 36 months, indicating most benefit among women with low income (18-20).

Neville and his colleagues conducted a study in the UK in 2013. Prospective and retrospective studies done in nursing mothers for 2 years after birth with body mass index (BMI) greater than 18.5 kg/m^2. The majority of results reported small and independent association between breastfeeding and weight change or

changes in body composition (21-23). In our study there was no significant relationship between weight loss and breast-feeding mothers for maternal age and parity. But the results showed there was a significant association between weight loss and maternal pre-pregnancy weight ($p<0.05$).

The mean and standard deviation of maternal weight before pregnancy and at the end of the sixth month showed that mothers who exclusively breastfed their infants had achieved weight loss. Based on the results they achieved pre-pregnancy weight approximately.

Since the process of breastfeeding has many positive effects on physical and mental health for both mother and baby are encouraging mothers to continue breastfeeding and awareness can be an important step to improve physical and mental health of mothers and their babies.

Table 1: Distribution of mothers according to demographic variables of the study unit

Variables	Number (%) (n=200)
Age (years)	
<20	7(3.5)
20-30	115(57.5)
>30	78(39.0)
Maternal education	
Primary	10(5.0)
high school	51(25.5)
Diploma or higher	139(69.5)
BMI	
<18.5	10(5.0)
18.5-24.9	134(67.0)
25-29.9	44(22.0)
≥30	12(6.0)
Exercise	
yes	120(60.0)
No	80(40.0)
Mother's job	
housewife	163(81.5)
Employed	37(18.5)
Parity	
1	103(51.5)
2	75(37.5)
3	17(8.5)
≥4	5(2.5)
Type of delivery Vaginal	106(53.0)
Caesarean section	94(47.0)

Table 2: Mean and standard deviation of some demographic characteristics of the study units

Variable	min max	Mean± SD
Weight before pregnancy(Kg)	40 92	63.2±9.3
Maternal height(cm)	144 178	162.1±6.1
Body Mass Index before pregnancy (Kg/M^2)	17 35	24.2±3.3
Weight gain in pregnancy (kg)	5 24	12.1±3.5
Weight loss during the 6 months of postpartum (kg)	0 17	6.24±2.95

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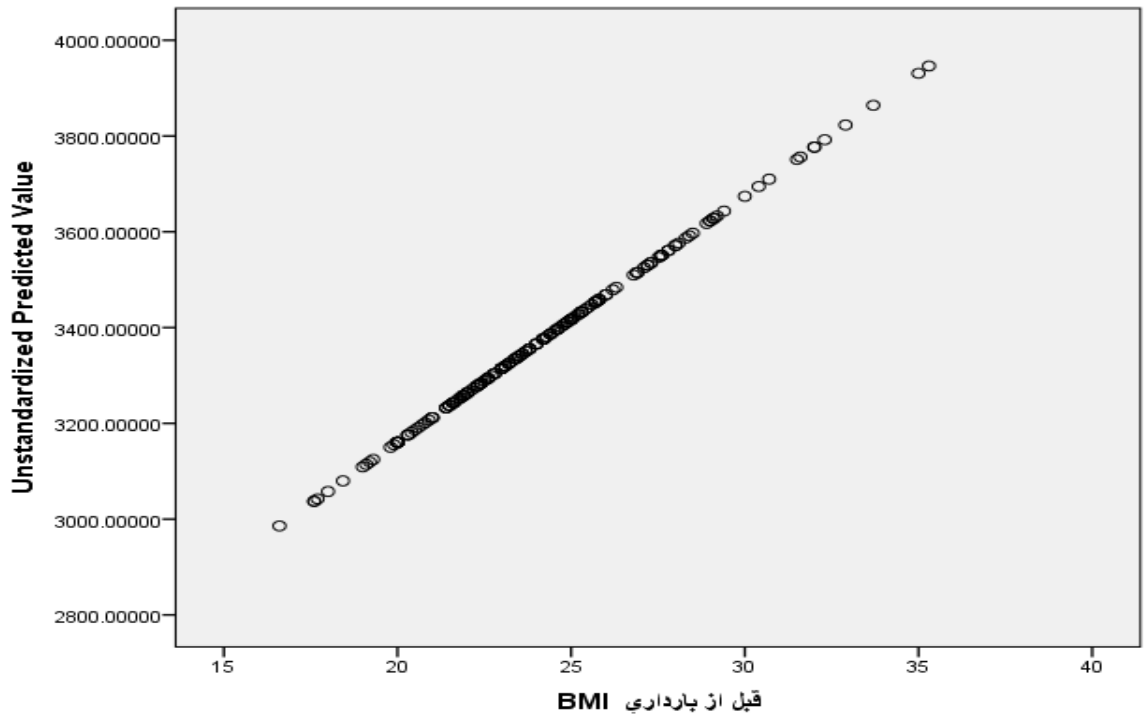
Table 3: The results of multiple regression analysis of factors affecting weight loss at the end of the sixth month after delivery

Variable	Coefficient of Regression		Standardized regression coefficients	P- Value
	B	SE	B	
Age of mother	0.195	0.099	0.167	0.001*
Education	0.065	0.091	0.057	0.47
job	0.066	0.118	0.039	0.57
parity	0.15	0.077	0.173	0.04*
height	0.018	0.007	0.163	0.01
BMI before pregnancy	0.154	0.093	0.135	<0.001*
Weight gain in pregnancy	0.018	0.05	0.09	<0.001*
Type of delivery	0.198	0.092	0.151	0.03
exercise	0.059	0.095	0.045	.001*

* P < **0.05**

Figure 1: The relationship between maternal BMI and birth weight



CONCLUSIONS

Mothers who had exclusive breast feeding during 6 month after delivery they have had favorable weight loss after this period. Therefore, exclusive breastfeeding helps to mothers for lose weight after delivery. In order to encourage mothers to breast-feed their baby exclusively until six months can help to achieve their weight loss and health. It is recommended that studies be carried out to determine the effects of factors such as duration and amount of exercise during breastfeeding and the length and frequency of breastfeeding on maternal weight loss.

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