

## Effect of Health Care as the “Home Visiting” on Postpartum Depression: A Controlled Clinical Trial

### Abstract

**Background:** Postpartum depression is considered as a major health complication of women after delivery. It is necessary to find an essential approach for the prevention of its serious consequences on mothers' and infants' health. The aim of this study was to investigate the effect of home visiting on postpartum depression. **Methods:** The first stage of study was the design of postpartum package. According to the package, a clinical trial was performed for 276 mothers who had delivered in affiliated hospitals of Shahid Beheshti University in 2013 and were divided into two groups, i.e., control group and intervention group. Intervention group received health care by home visiting, and control group had no intervention. Mothers were supposed to fill up Edinburgh Postnatal Depression Scale before and 60 days after delivery, and the results were compared. The data were analyzed by SPSS version 18 software and *t*-test, Chi-square, and logistic regression test. **Results:** The mean ages of participants were  $27.03 \pm 5.2$  standard deviation (SD) in intervention group and  $27.37 \pm 5.4$  SD in control group. Occurrence of depression was 7.6% in intervention group and 19% in control group, and there was a significant difference between two groups ( $P < 0.05$ ). The logistic regression results indicate that groups (intervention and control) ( $P = 0.087$ , odds ratio [OR] = 2.1); planned and unplanned pregnancy ( $P = 0.028$ , OR = 2.5) and the infant nutrition ( $P = 0.025$ , OR = 2.2) are significantly associated with the postpartum depression. **Conclusions:** Providing postpartum home visiting can influence postpartum depression in a positive way and could improve mothers' and infants' health.

**Keywords:** Edinburgh Postnatal Depression Scale, home visiting, postpartum depression, women health

### Introduction

Postpartum period which is a critical time for mothers and infants is defined as the period of time between the first few hours and the 42<sup>nd</sup> day after delivery.<sup>[1]</sup> Women could have different physical, emotional, and psychological problems during this period which may disturb their normal life.<sup>[2]</sup> Many researchers believe that women must be supported emotionally after delivery because of increased risk of occurrence and recurrence of psychological disorders.<sup>[3]</sup> Postpartum depression is a major health problem which may influence mother–infant relationship,<sup>[4]</sup> mothers' health, and the infants' growth and development.<sup>[5]</sup> The rate of postpartum depression is reported between 5% and 40% in various countries.<sup>[6]</sup> In Iran, this rate is reported as 20%.<sup>[7]</sup> More than 12.5% of the women who were admitted in clinics during postpartum period are suffering from psychiatric disorders. While

motherhood is supposed to bring joyful moments, postnatal depression causes unexpected behavioral changes.<sup>[6]</sup> The symptoms and signs may consist of mood and sleep changes, anorexia, psychomotor disorders, fatigue, disorientation, the feeling of guilt, and loss of interest in daily activities. As a result, mothers are not able to play their role as mothers and wives. In severe cases, postpartum depression could result in suicide and infanticide.<sup>[8]</sup> Due to serious effects of postpartum depression on mothers', infants', families', and social health, it is necessary to provide an essential plan for prevention, early detection, and treatment of postpartum depression. Providing postpartum health-care services is an effective means of the prevention of maternal and infantile unintended consequences. The method of health care providing and the level of supporting that mothers and infants receive determine mothers' compatibility with the complications of this period.<sup>[9]</sup> Home

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visiting after delivery is one of the best ways for family supportive and educative needs,<sup>[10,11]</sup> and due to problems of transportation for mothers and infants in early days after delivery, it is better to provide health-care services at home.<sup>[12]</sup> According to the National Association For Home Care and Hospice definition, home visiting is done for people and family health promotion, and the significant part is that the health-care provider goes to the people's homes.<sup>[13]</sup> Home visiting provides health care and the required education for every family in their houses.<sup>[14]</sup> Women, who participated in this health-care model, reported better quality and method of cares in comparison with those who were referred to hospitals.<sup>[15]</sup> Other studies suggest that women who were provided health care at home after delivery were more satisfied than the others.<sup>[16]</sup>

Although home visiting after delivery is now broadly accepted, very little is known about the effect of home visiting on postpartum depression incidence and prevalence. The purpose of this study was to compare the rate of postpartum depression in women who received postpartum care through home visiting and women who did not receive this kind of care.

## Methods

### Study design

This study was conducted in two stages. At the first step, investigations were conducted through Google, Google Scholar, National Guideline Clearinghouse, WHO, NICE, and PubMed databases to collect guidelines and the various methods of postpartum home visiting in different countries. Then, comprehensive guidelines were selected and used to achieve the appropriate guideline. It is determined that there have been no instructions in Iran for screening and treatment of postpartum depression. In consultation with obstetrics, pediatrician, preventive, and community medicine professionals, some changes were also made based on the country's status and needs. Finally, the postpartum home care package was designed. The package was used in the next step of the study. Postpartum care package was the same to the Iranian National Guideline of Maternal and Neonatal Postpartum Cares designed by Ministry of Health (revised Spring 2008) with an emphasis on nutrition and physical activity.

### Study instruments

Edinburgh Postnatal Depression Scale (EPDS) consists of 10 questions and was designed in 1978 by Cox *et al.* It is used frequently to assess and diagnose depression. Its specificity, sensitivity, and predictive values were confirmed in Iran.<sup>[17,18]</sup> EPDS includes: <10, no depression; 10–12, mild depression; and >13 or having suicide idea, severe depression.<sup>[19]</sup> The questionnaire was used to collect data, and ten professors of Faculty of Nursing approved the questionnaire.

EPDS is used in Australia and the USA. However, NICE guideline from England has no recommendation to use Edinburgh questionnaire for postpartum depression. In the present study, EPDS was used for postpartum depression screening.

### Participants

Participants were selected from the women who delivered in affiliated hospitals of Shahid Beheshti University (Taleghani, Shohada, Mahdie, and Imam Hossein) from July to October 2013. Sample size was calculated with 5%  $\alpha$  and 20%  $\beta$ , and the minimum difference rate between two groups was 20%. Minimum sample size was 89 in each group. Finally, 276 mothers in the 1<sup>st</sup> day after their deliveries were selected sequentially. After mothers study and signed the satisfaction form (68 from each hospital), mothers filled up EPDS. If their scores were higher than 10 (having depression) or had suicidal thoughts, they were excluded before any intervention and referred to a psychiatrist. If not, they were allocated to intervention group (92) and control group (184) randomly (for every person in the first group, two persons were placed in the second group) [Figure 1].

### Intervention

Implementing a randomized clinical trial was the second phase of this research.

The intervention was the postpartum health care providing at home on the 3<sup>rd</sup>–5<sup>th</sup> and 13<sup>th</sup>–15<sup>th</sup> day after delivery according to the designed guideline. Health-care providers were educated midwives. The average visit time was 30–45 min which would change with mothers' request. Phone numbers of midwives were available for mothers. Midwives had attended a workshop, in which they were informed about their duties in this research before intervention, and all of them had the same method of intervention.

Postpartum home visiting includes greeting and recording checklists which were filled by midwives after interviewing and examining the mother and infant on each visit. The data that were collected consist of mother's lifestyle and socioeconomic factors, alcoholism, symptoms of psychological disorders, medical history, recognized wife and any social abuse, vital sign, shock, consciousness, convulsion, vertigo, defective problems, breathing problems, abdominal or flank pain, any bleeding, suture complications, inflammation of the gums, symptoms of psychological disorders, comorbidities, consultations on family planning, breastfeeding and medicinal supplements, examination of extremities, eyes, breasts, abdomen, and urinary and reproductive organs, main component providing health education about any problem, daily physical activity, and proper nutrition based on her socioeconomic status and health status. On the 1<sup>st</sup> day, the collected data consisted of demographic, obstetric, and neonatal data. On the 3<sup>rd</sup>–

5<sup>th</sup> and 13<sup>th</sup>–15<sup>th</sup> day, related checklists were completed after home visiting. On the 60<sup>th</sup> day, the outcome assessing checklists and EPDS were completed for all participants, and the two groups were compared with each other.

The inclusion criteria of the study were: not having a chronic disease, having an Iranian nationality, having a single, normal weight neonate without congenital disorders, having EPDS score of <10, not having a history of depression, and not taking antidepressants. The exclusion criteria were unwillingness to continue the study and migration from the area of study.

This clinical trial was approved and registered as IRCT 12013060313565N1.

### Statistical analysis

All statistical calculations were performed using computer software SPSS version 18 (IBM Company). The normality of the data was examined with Kolmogorov–Smirnov test. Independent *t*-test was used for quantitative data, and Chi-square test and Fisher exact were used for qualitative data. Then, regression test was used to examine the relationship between the variables. Significance level of 0.05 was considered in this study.

### Results

In this study, mean age of the women was  $27.19 \pm 5.3$

standard deviation (SD). The mean ages of participants were  $27.03 \pm 5.2$  SD in intervention group and  $27.37 \pm 5.4$  SD in control group. The oldest mother was 44 years old, and the youngest mother was 17 years old. There were no significant differences between the intervention group and control group in the age variable, number of pregnancies, deliveries and abortions, mothers' jobs and their husbands' jobs, and mothers' and their husbands' educational level [Table 1]. In this study, postpartum depression rate was 7.6% in the intervention group which had health-care services at home and 19% in the control group on the 60<sup>th</sup> day after delivery. The result showed that there was a significant difference between these two groups ( $P < 0.05$ ) [Table 2]. By adjusting the significant variables in postpartum depression and using logistic regression test, effective variables in the postpartum depression consisted of group variable which was statistically significant at  $P < 0.1$  and odds of depression in the group who had no intervention was 2.1 times more than group with home visiting; unplanned/planned pregnancy variable ( $P = 0.028$ ) and odds of depression in the women who had unplanned pregnancy was 2.5 times more than those who had planned pregnancy; kind of infant nutrition ( $P = 0.025$ ) and odds of depression in mothers who had not exclusive breastfeeding was 2.25 times more than mothers who had exclusive breastfeeding. Table 3 shows the variables in logistic regression test.

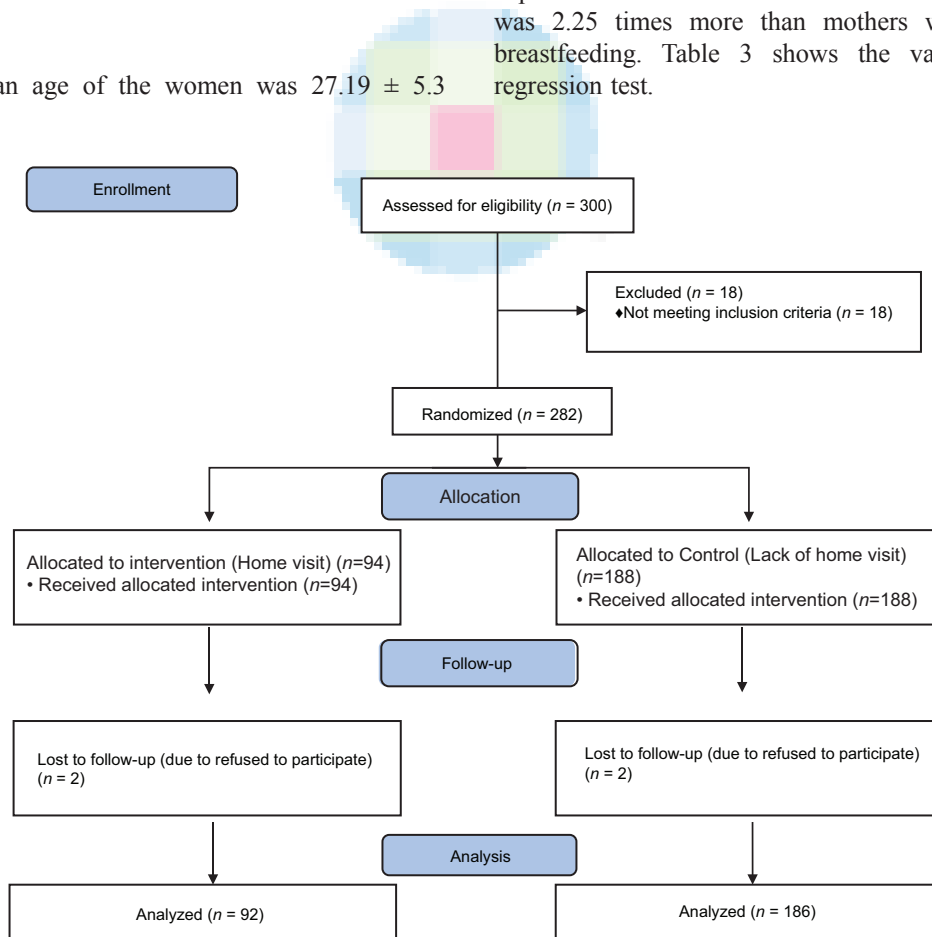


Figure 1: Study flow chart

## Discussion

This study showed that incidence rate of postpartum depression was decreased in the group which had received postpartum health-care services at home compared to those who had not received home visiting services. There was a significant difference between the two groups ( $P < 0.05$ ). This finding about postpartum depression was similar to Janice Christie cluster trial which showed that after 8 weeks, the rate of depression in women who had home visiting and filled up Edinburgh questionnaire was decreased.<sup>[20]</sup>

**Table 1: The descriptive statistics of the group which had postpartum health-care services at home and the control group**

Demographic variables	Control	Group	P	test
Age (mean±SD)	27.37±5.45	27.03±5.20	0.72	t-test
Pregnancy number (mean)	2.03	2.12	0.52	t-test
Delivery number (mean)	0.77	0.80	0.73	t-test
Level of education (%)				
Illiterate	2.2	6.5	0.46	Chi-square or Fisher exact
Elementary	14.7	16.3		
Mid school	21.7	20.7		
High school	48.4	44.6		
Academic	13.0	12.0		
Occupation (%)				
Housewife	92.4	94.6	0.50	Chi-square or Fisher exact
Employed	7.6	5.4		
Delivery type (%)				
Cesarean	65.2	60.9	0.47	Chi-square
Vaginal	34.8	39.1		
Abortion numbers (mean)	0.26	0.34	0.73	t-test

SD=Standard deviation

MacArthur *et al.* showed that in their study, women who were supervised by a midwife 3 months after delivery had better EPDSs, and the rate of depression was less in comparison to the control group.<sup>[21]</sup> Armstrong *et al.* assessed the effect of home visiting on the first 6 weeks after delivery on women's health using EPDS, and they showed a significant improvement in the postpartum depression in intervention group.<sup>[22]</sup> However, in 2011, Ian reported that home visiting had no effect on postpartum depression.<sup>[23]</sup> It should mentioned that in Paul's study, women who had home visiting after delivery were compared with women who were provided with postpartum health care by the doctors at the scheduled determined time after being discharged from hospital.

Health care by home visiting after delivery may be an effective way for decreasing postpartum depression incidence and prevalence, also a good way for decreasing the severity of the disease. This effectiveness would be acceptable for several reasons. First of all, many studies showed that the lack of social support is one of the most important risk factors for postpartum depression,<sup>[24-26]</sup> and health-care services by home visiting after delivery are an appropriate way for improving social support. It can also resolve many problems timely for new mothers who experience many stressful and critical psychological problems which would aggregate the process of depression development, and it may play the role of a protecting factor of depression disease. Second, studies showed that postpartum depression is a disease which is not well diagnosed, and this is still a problem for public health.<sup>[27,28]</sup> Postpartum home visiting is a model which is providing health-care services at home and take care of the persons who may not admit to doctors and could facilitate the identification of the disease as early as possible.

**Table 2: The distribution of postpartum depression of the group which had their health-care services at home and the control group on the 60<sup>th</sup> day**

Postpartum depression based on Edinburgh scales	Sum		Control		Group	
	Percentage	Number	Percentage	Number	Percentage	Number
Mild (<10)	84/8	234	81	149	92/4	85
Moderate (10-13)	8	22	11/4	21	1/1	1
Severe (>13)	7/2	20	7/6	14	6/5	6
Total	100	276	100	184	100	92

$\chi^2/P: 0/01$

**Table 3: Variables which were effective in postpartum depression in logistic regression test**

Study variables	Co efficient	SD	df	Significance	OR	CI
Group <sup>a</sup>	0.773	0.451	1	0.087	2.166	0.894975-5.243347
Job <sup>b</sup>	0.623	0.581	1	0.284	1.864	0.597047-5.822676
Gender satisfaction <sup>c</sup>	-0.408	0.779	1	0.601	0.665	0.144447-3.061301
Planned pregnancy <sup>d</sup>	0.929	0.422	1	0.028	2.531	1.107251-5.789929
Infant feeding <sup>e</sup>	0.815	0.363	1	0.025	2.259	1.109068-4.601949

<sup>a</sup>Control group/intervention group, <sup>b</sup>Housekeeper/employed, <sup>c</sup>Gender satisfaction/gender dissatisfaction, <sup>d</sup>Unplanned/planned pregnancy, <sup>e</sup>Nonexclusive/exclusive breastfeeding. SD=Standard deviation, OR=Odds ratio, CI=Confidence interval



According to previous studies, postpartum depression is more prevalent in low socioeconomic populations.<sup>[29]</sup> Despite this situation, admitting to medical centers will be lower than expected, and identification and treatment of disease may be delayed. However, by providing health-care services at home, especially in low socioeconomic population, it is possible to cover the highest number of people who may be at the risk for depression. Postpartum depression service program could be integrated with other programs of postpartum health care. It would reduce costs and increase efficiency for the population receiving the services.

In this research, unplanned pregnancy had a significant correlation with postpartum depression. Beck, in a meta-analysis, investigated the effective factors on postpartum depression. Unplanned pregnancy was one of these important predisposing factors.<sup>[30]</sup>

In the present study, type of infant feeding also had a significant effect on postpartum depression. In Dennis and McQueen study, mothers who reported depression symptoms had an increasing rate of nonexclusive breastfeeding (decreased breastfeeding time and increased breastfeeding problems),<sup>[31]</sup> and in Kendall–Tackett study, mothers who chose exclusive breastfeeding reported the decreased rate of postpartum depression.<sup>[32]</sup> Moreover, this study shows that exclusive breastfeeding is in fact a protective factor of postpartum depression.<sup>[1]</sup>

In this case, it is not clearly determined whether exclusive breastfeeding reduces depression or depressed persons refuse breastfeeding?

## Conclusions

Providing health-care services through home visit is an effective way to prevention, early detection, and management of postpartum depression.

Home visiting during postpartum period should be considered by investigators and specialists as a way to promote the level of maternal and child health. It is recommended that future studies be designed with longer follow-up, and the consequences be reviewed 6 months after delivery. One important advantage of this study is home visiting of mothers and infants in the 1<sup>st</sup> week after delivery, which has a great impact on maternal adaptation to the new conditions, because the most critical problems after delivery occur in the first 10 days.

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## Conflicts of interest

There are no conflicts of interest.

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