# Social support during pregnancy and its relationship with anthropometric indices at birth and postnatal depression in Iranian women

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## Abstract

Background: Pregnancy is a critical stage of a woman's life. Considering the dramatic increase of the need for social support during pregnancy, the present study aimed to determine the level of social support for pregnant women and its relationship with neonatal anthropometric indices and postnatal depression in pregnant women who referred to health centers of Tabriz, Iran in 2013.

Methods: In this study, 450 women were selected using cluster sampling. We assessed socio-demographic characteristics and social support status (using interpersonal support evaluation list) ISEL)) at 26-36 weeks of pregnancy. Neonatal height and weight were measured immediately after birth. Maternal depression was assessed six weeks after delivery using the Edinburgh postnatal depression scale (EPDS). Pearson's correlation was used for determining the relation between the social support score with anthropometric indices and depression score.

Results: The mean (standard deviation) score of social support was 69.6 (14.6) out of 90. Overall, 12% of the pregnant women had poor social support (score less than 45). Increasing social support score was correlated with decreasing depression score (P<0.001, r=0.421). There were no statistically significant relationships between social support and birth weight (p=0.055†) and height (p=0.132).

Conclusion: Social support during pregnancy can reduce occurrence of postnatal depression. As postnatal depression has many adverse consequences, providing social support for pregnant women should be emphasized.

Key words: Social support¸ anthropometric indices at birth¸ postnatal depression

## Introduction

Pregnancy and the postnatal period are the most critical stages of a woman's life requiring equal physical, psychological, and social attention. Pregnant women need to be supported by their family and friends.[1] According to the conceptual framework published by the World Health Organization (WHO), psychological stressors, anxiety, depression, and social support are among the social determinants of health.[2]

Social support has recently attracted considerable attention. Myler pictured social support as an important predictor of health status.[3] It is believed that social support can directly boost self-confidence, increase resistance to infections, and contribute to a healthier lifestyle. Moreover, it may indirectly lead to social adjustment, relevant reaction to stressors, decreased stress, and thus enhanced physical and mental health.[2¸4¸5]

Neonatal mortality rate is a significant, multifactorial indicator of health in any society.[6] The prevalence of low birth weight infants in Iran has been reported as 8%. Low birth weight can be a result of various factors such as low socioeconomic level and inadequate maternal social support[7¸8] .

Mahmoudi et al. (2013) suggested demographic factors to have the greatest effects on birth weight [9]. On the other hand, inadequate social support will affect not only fetal health, but also mothers' health, either during pregnancy or after delivery [10-12].

While a study described increased risk of postnatal depression as a result of poor social support during pregnancy [10], some other studies have indicated the absence of relationships between depression and various biological and psychological factors and poor social support [13¸14].

Considering the contradictory results of previous studies and the effects of sociocultural differences on social support provision, we conducted this research to determine the level of social support for pregnant women and its relationship with birth weight and height and postnatal depression in Tabriz, Iran in 2013.

## Materials and Methods

This study was done from October 2012 to May 2013 on pregnant women referring to health centers of Tabriz¸ Iran. Using Stata (StataCorp, USA¸version 9.2) and considering 1.0 for difference in mean depression score between the groups and sd=1.4 (based on results of a study done by Mohammadi et al.[15])¸ β=0.20¸ α=0.05¸ sample loss of = 15%; and design effect = 1.5 for cluster sampling , the sample size was calculated to be 450[15].

**Selection of participants**
In this study, 26- to 36-week pregnant women who had a record at the selected health centers in Tabriz were included if they were aged 18-35 years, had singleton pregnancy, were literate and generally healthy (as stated by the subjects), and scored less than 30 on the Perceived Stress Scale. Women who were smoking and had substance abuse habits, history of divorce/separation, jobs involving night shifts, history of infertility, and obstetric problems, were not included. Moreover, the presence of fetal abnormalities and intrauterine growth retardation prevented women from entering the study. After obtaining permission from Tabriz University of Medical Sciences (Tabriz, Iran), cluster sampling was carried out. First, 10 health centers in Tabriz were randomly selected and then convenience sampling was used to select subjects based on the number of visitors per center. Eligible women were invited to participate in the study and asked to provide written informed consent.

**Study tools**
Four questionnaires were used for data collection.

***Sociodemographic and obstetric characteristics***
Sociodemographic and obstetric characteristics were collected using a 19-item researcher-made questionnaire including age, the woman and her spouse's job and education level, number of pregnancies, gestational age, fetal sex, and obstetric risks. The questionnaire was validated for content and face validity.

***Social support***
The standard Interpersonal Support Evaluation List (ISEL) was used to rate the social support mothers received from their family, friends, and community members. The questionnaire contained 30 questions which could be answered as definitely false, probably false, probably true, and definitely true (with the first and last options having the minimum and maximum scores, respectively). The total social support score was achieved by summing the scores of all items [16]. Since no cut off point has been previously determined for the ISEL, we categorized subjects with scores below and above 50% (45 out of a total of 90) to have received (unfavorable and Favorable) social support, respectively.

***Anthropometric assessment***
Height/length: Standard techniques measurement was applied; A form including anthropometric indices, as well as gender, was also completed shortly after birth.

***Postnatal depression***
Finally, the Edinburgh Postnatal Depression Scale (EPDS), developed by Cox et al (1978) and revised in 1994, was used to measure perinatal and postnatal depression. EPDS consists of 10 multiple choice questions. Each question is scored between zero and three, the total score of the scale ranges between zero and thirty. Mothers select the options that describe their feelings during the last week. Score 12 or higher represents postnatal depression.

All the questionnaires were completed through interview. While the sociodemographic questionnaire and ISEL were filled out during pregnancy, anthropometric indices form after birth and the EPDS was completed six weeks after delivery.

To determine the validity of the questionnaire, face and content validity were used. Moreover, with test and re-test on 30 people, reliability of the two aspects of repeatability (ICC = Intra Class Correlation) and internal consistency (Cronbach's alpha coefficient) was determined. ICC (95% Confidence Interval) and Cronbach's alpha for social support were (0.71-0.94) and 0.86 respectively.

Data analysis was performed using SPSS version 18. Skewness and kurtosis tests for normality of quantitative data showed that depression did not have normal distribution. Therefore, logarithmic transformation was performed. Reassessment of normality with skewness and kurtosis tests suggested the normal distribution of depression.

## Statistical analysis
Descriptive statistics including frequency, mean, standard deviation, and median (percentile 25 to percentile 75) were used to describe social support, sociodemographic characteristics, anthropometric indices, and depression. The relationships between maternal social support and the infants' birth height and weight were evaluated with Pearson's correlation analysis. The Pearson correlation was used to examine the relationship between depression and social support.

## Results

### Characteristics of the study population
Although 450 pregnant women were initially included, 60 participants were excluded since they could not be followed up after delivery due to changed residence (22 participants) or unwillingness to participate (38 participants). Hence, data of a total of 390 women was ultimately analyzed.

### Sociodemographic and obstetric characteristics
Mean (SD) of the mothers' age, birth spacing and gestational age at the recruitment time was 26.5 (5.1) years, 5.7 (3.2) years and 31.1 (3.9) weeks, respectively. Birth spacing was more than five years in over 76%. The mean body mass index (BMI) of the participants was 25.6 (SD= 4.7) kg/m2 and half of them had normal BMI. The majority (92.8%) of the subjects were housewives. About two-thirds of the participants' spouses had Primary school or Middle High school education and 54.6% of them were self-employed. The majority (97%) of the women reported no pregnancy problems (Table 1).

**Table 1: Sociodemographic characteristics in pregnant women referred to health centers of Tabriz city**

| Variable | Number (percent) | Variable | Number (percent) |
|---|---|---|---|
| **Number of pregnancies** | | **Age (years)** | |
| 1 | 237 (52.7) | Less than 25 | 165(36.6) |
| 2 | 145 (32.2) | 25-29 | 138 ( 30.6) |
| 3 and more | 68 (15.1) | 29 or more | 147 ( 32.8) |
| mean (SD) | 1.7 (0.9) | mean (SD) | 26.5 (5.1) |
| **Occupation** | | **Education** | |
| housewife | 418 (92.8) | Primary school | 157 (34.9) |
| working at home | 21 (4.7) | Middle High school | 139 (30.9) |
| work outside the home | 11 (2.5) | High school | 128 (28.4) |
| | | College | 26 (5.8) |
| **Spouse occupation** | | **Spouse Education** | |
| Unemployed | 16 (3.5) | Primary school | 141 (31.3) |
| Labor | 131(29.1) | Middle High school | 140 (31.1) |
| employees | 58(12.8) | High school | 125 (27.8) |
| self-employed | 245(54.6) | College | 44 (9.8) |
| **birth spacing (years)** | | **BMI (kg / m²) *** | |
| less than 3 | 28(6.2) | Underweight | 36 (8) |
| 3 to 5 | 88(19.6) | Normal | 227 (50.4) |
| More than 5 | 334(74.2) | Overweight | 84 (18) |
| mean (SD ) | 5.7(3.2) | Obese | 103 (23.6) |
| **Pregnancy problems **** | | | |
| yes | 13(2.9) | mean (SD ) | 25.6 (4.7) |
| no | 437(97.1) | | |

BMI (kg / m²) were measured on weight and height and BMI were classified into 4 groups, underweight (less than 19.8), normal (19.8-26), overweight 26-29 and obese (greater than or equal to 29).

** Pregnancy Problems include bleeding, high blood pressure, gestational diabetes etc.

### Social support and anthropometric indices

The subjects' mean score of social support was 69.5 (SD 14.6) out of 90 and 50 mothers (12%) had received poor social support.The Mean (SD) birth weight and height were 3206 (552) and 49.7 (2.5)¸ respectively. The lowest and highest birth weights among the neonates were 1590 and 5700 grams, respectively. A total of 85 infants (18.9%) had birth weight below 2500 grams (LBW). There was no significant relationship between social support and birth height (p=0.132) and weight (p=0.055) (Table 2).

**Table 2: Relationship between social support in pregnant women and neonatal anthropometric parameters**

| Neonatal anthropometric parameters | Number (percent) | Social Support score | Test results for the relations | |
|---|---|---|---|---|
| | | Mean (SD) | p | r |
| **Height (cm)** | | | | |
| 51 or more | 124 (27.6) | 69.8 (14.9) | 0.851* | |
| Less than 50 | 326 (72.4) | 69.5 (14.6) | 0.132† | 0.071 |
| **Weight (grams)** | | | | |
| 2500 and more | 365 (81.1) | 70.3 (14.3) | 0.024* | |
| Less than 2500 | 85 (18.9) | 66.3 (15.8) | 0.055† | 0.099 |
| All | 450 | 69.6 (14.6) | | |

* results of independent t-test
†results of Pearson correlation

### *Social support and postnatal depression*

The median (percentile 25 to percentile 75) postnatal depression scores in mothers with unfavorable and favorable social support were 8.5 (1.7-13.2) and 2.0 (1.0-6.0), respectively.

There was a statistically significant relationship between maternal social support and postnatal depression score (p‹0.001) (Table 3).

**Table 3: Status of social support during pregnancy, postnatal depression and its relationship**

| Social support status | Number | Depression score | | Test result for the relation |
|---|---|---|---|---|
| | | Mean (SD) | Median (p 25 to p75)* | P<0.001† r=0.421 |
| Favorable | 340 | 3.9 (3.9) | 2.0 (1.0 to 6.0) | |
| Unfavorable | 50 | 8.9 (6.6) | 8.5 (1.7 to 13.2) | |
| Total | 390 | 4.5 (4.6) | 3 (1 to 7) | |

* (Percentile 25 to Percentile 75), † results of Spearman's rho

We found most of our participants to have enjoyed a relatively good level of social support as only 12% of the studied women had received poor social support, similar to Collins et al. [1] In the present study, there was no significant relationship between mean social support score of pregnant mothers and birth weight and height. Similarly, in a clinical trial, Hodnett et al (2005) pointed out the slight effects of social support on low birth weight.[17] However, the findings of Feldman et al (2000) and Collins et al (1993) were in contrast to ours.[1¸18] Lynch et al (1997) stated that a woman with poor support in the family would have a child with lower birth weight.[19]   Such inconsistency can be attributed to differences in sample size and culture and lifestyle of the study population. Furthermore, in this study most of our participants had a good level of social support.

Our findings indicated a significant relationship between social support during pregnancy and postnatal depression. Lau et al (2008) reported higher prevalence of perinatal and postnatal depression in women with less social support. [20¸21] According to Logsdon et al (1994), adequate maternal social support, primarily by the spouse and then by the society, could reduce the risk of postnatal depression by 40%.[22] Likewise, Chen et al (2007) highlighted the relationship between social support and postnatal depression[23]. They emphasized

on the significance of sufficient social support in improving pregnancy outcomes both for the fetus and the mother. These results are consistent with ours.

Since we could establish a significant relationship between social support for pregnant women and postnatal depression, special attention has to be paid to social support before and during pregnancy. Moreover, health care providers are required to explain the value of comprehensive social support during pregnancy to the women's family. Preventive measures, e.g. classes and educational pamphlets, should also be taken on the irreversible consequences of poor social support during pregnancy for the parents and the community.

One of the limitations of the present study was its cross-sectional nature in which the observed relationships were not exactly indicative of a causal nature. Hence, in order to obtain more precise results regarding the relationship between social support and anthropometric indices and postnatal depression, further studies have to evaluate maternal social support throughout the pregnancy and even before its initiation.

## Conclusion

Social support is effective on the incidence of postnatal depression. Therefore, enhancing social support from the family appears to be essential for improving the mental health of mothers. As the probability of mental disorders and adverse outcomes of pregnancy may increase in mothers with poor social support, promoting interpersonal communication skills among adults can increase access to the required social resources for maintaining mental health and coping with stressful life events.

Moreover, establishment of a support system (with the pregnant woman's spouse and family) might have a prominent effect on reducing the prevalence of mental disorders during pregnancy.

## References

1. Collins NL, Dunkel-Schetter C, Lobel M, Scrimshaw SC. Social support in pregnancy: psychosocial correlates of birth outcomes and postpartum depression. Journal of personality and social psychology. 1993;65(6):1243.
2. Solar O, Irwin A. A conceptual framework for action on the social determinants of health. 2007.
3. Chung TK, Lau TK, Yip AS, Chiu HF, Lee DT. Antepartum depressive symptomatology is associated with adverse obstetric and neonatal outcomes. Psychosomatic Medicine. 2001;63(5):830-4.
4. Ye X-Q, Chen W-Q, Lin J-X, Wang R-P, Zhang Z-H, Yang X, et al. Effect of social support on psychological-stress-induced anxiety and depressive symptoms in patients receiving peritoneal dialysis. Journal of psychosomatic research. 2008;65(2):157-64.
5. Landman-Peeters K, Hartman CA, van der Pompe G, den Boer JA, Minderaa RB, Ormel J. Gender differences in the relation between social support, problems in parent-offspring communication, and depression and anxiety. Social Science & Medicine. 2005;60(11):2549-59.

6. Stoll B, Kliegman R. Overview of mortality and morbidity. Behrman RE, Kliegman RM, Jenson HB Nelson textbook of pediatrics 17th Edition, Philadelphia, Saunders. 2004:519-23.
7. Agbaliyan, F. Examine factors associated with low birth weight. Iranian Journal of Pediatrics. 1386;17(1):27-33.
8. Murphy CC, Schei B, Myhr TL, Du Mont J. Abuse: a risk factor for low birth weight? A systematic review and meta-analysis. Canadian Medical Association Journal. 2001;164(11):1567-72.
9. Mahmoudi, Z, Karimlo, M, Sajjadi, H, et al. Low birth weight and related factors in Iran: According to the World Health Organization Model. Journal of Rehabilitation, University of Welfare and Rehabilitation. 2013;5(2).
10. Sherwen, L, Scolovena, MA, Weingarten, C. Maternity nursing. London. application & angle. 2003:90-113.
11. Zahrai, H, Ahmadi, R. Impact on the supportive role of the midwife in preventing postpartum depression. Journal of Nursing and Midwifery. 2003;2(19):3-5.
12. Honikman JI. The role of Postpartum Support International in helping perinatal families. Journal of Obstetric, Gynecologic, & Neonatal Nursing. 2006;35(5):659-61.
13. Beck CT. The effects of postpartum depression on maternal-infant interaction: a meta-analysis. Nursing research. 1995;44(5):298-305.
14. Harris, B. Biological and hormonal aspects of postpartum depressed mood: working towards strategies for prophylaxis and treatment. Special Issue: Depression. British Journal of Psychiatry. 1994;164:288-92.
15. Mohamadi, F. Effect of exercise on fatigue, depression and postpartum in Tabriz city: Tabriz University of Medical Sciences; 2010.
16. Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. Journal of Applied Social Psychology, 13, 99-125.
17. Hodnett ED, Fredericks S. Support during pregnancy for women at increased risk of low birthweight babies. The Cochrane Library. 2001.
18. Feldman PJ, Dunkel-Schetter C, Sandman CA, Wadhwa PD. Maternal social support predicts birth weight and fetal growth in human pregnancy. Psychosomatic Medicine. 2000;62(5):715-25.
19. Lynch JW, Kaplan GA, Salonen JT. Why do poor people behave poorly? Variation in adult health behaviours and psychosocial characteristics by stages of the socioeconomic lifecourse. Social science & medicine. 1997;44(6):809.19.
20. Cheryl, T. Predictors of Postnatal Depression: An Update. Nursing Research (NR). 2001;50 (5):275-85..
21. Lau Y, Wong K, Fu D. The role of social support in helping Chinese women with perinatal depressive symptoms cope with family conflict. Journal of Obstetric, Gynecologic, & Neonatal Nursing. 2008;37(5):556-71.
22. Logsdon MC, McBride AB. Social support and postpartum depression. Research in nursing & health. 1994;17(6):449-57.
23. Chen CM, Kuo SF, Chou YH, Chen HC. Postpartum Taiwanese women: their postpartum depression, social support and health-promoting lifestyle profiles. Journal of Clinical Nursing. 2007;16(8):1550-60.