

Association of Delivery Type with Postpartum Depression, Perceived Social Support and Maternal Attachment

Sabri Herguner¹, Erdinc Cicek²,
Ali Annagur³, Arzu Herguner⁴,
Rahmi Ors⁵

¹Assoc. Prof. Dr., ⁴Resident, Necmettin Erbakan University, Meram Faculty of Medicine, Department of Child and Adolescent Psychiatry, Meram, Konya - Turkey

²Asistan Dr., Necmettin Erbakan University, Meram Faculty of Medicine, Department of Psychiatry, Meram, Konya - Turkey

³Pediatrician, ⁵Prof. Dr., Necmettin Erbakan University, Meram Faculty of Medicine, Department of Pediatrics, Meram, Konya - Turkey

ABSTRACT

Association of delivery type with postpartum depression, perceived social support and maternal attachment

Objective: There are contradictory findings in the literature about the effects of delivery type on postpartum depression and mother-infant interaction. The aim of this study was to investigate the relationship between delivery mode and postpartum depression, perceived social support, and maternal attachment.

Method: Forty females, who had vaginal delivery (VD) and 40 females, who had cesarean delivery (CD) were recruited to participate in the study. Edinburgh Postpartum Depression Scale (EPDS) was used to screen depressive symptoms and Maternal Attachment Scale (MAS) was used to detect maternal attachment. Social support was assessed by using Multidimensional Scale of Perceived Social Support (MSPSS).

Results: We found no significant differences in postpartum depression and perceived social support scores between the two groups. On the other hand, MAS scores were significantly lower in CD women.

Discussion: Our findings support that delivery mode had no impact on the development of postpartum depression. However CD may have negative effect on maternal attachment.

Key words: Delivery type, maternal attachment, postpartum depression, social support



ÖZET

Doğum şeklinin doğum sonrası depresyon, algılanan sosyal destek ve maternal bağlanma ile ilişkisi

Amaç: Yazında doğum şeklinin, doğum sonrası depresyon ve anne-bebek etkileşimi üzerine etkilerini inceleyen çalışmalarda farklı sonuçlar bulunmaktadır. Bu çalışmanın amacı doğum şekli ile doğum sonrası depresyon, algılanan sosyal destek ve maternal bağlanma arasındaki ilişkiyi incelemektir.

Yöntem: Vajinal doğum yapan 40 kadın ve sezaryen doğum yapan 40 kadın çalışmaya alınmıştır. Depresif belirtilerinin taranmasında Edinburg Doğum Sonrası Depresyon Ölçeği (EDSDÖ), maternal bağlanmanın incelenmesinde Maternal Bağlanma Ölçeği (MBO) kullanılmıştır. Sosyal destek Çok Boyutlu Algılanan Sosyal Destek Ölçeği (ÇBASDÖ) ile değerlendirilmiştir.

Bulgular: Doğum sonrası depresyon ve algılanan sosyal destek puanları açısından iki grup arasında fark bulunmamıştır. Diğer yandan MBO puanları SD yapan kadınlarda anlamlı olarak daha düşük bulunmuştur.

Sonuç: Çalışmamızın sonuçları doğum şeklinin doğum sonrası depresyon gelişimi üzerine bir etkisinin olmadığını desteklemektedir. Bunun yanında SD'nin maternal bağlanma üzerine olumsuz bir etkisi olabilir.

Anahtar kelimeler: Doğum şekli, maternal bağlanma, doğum sonrası depresyon, sosyal destek

Address reprint requests to / Yazışma adresi:
Assoc. Prof. Dr. Sabri Herguner
Necmettin Erbakan University, Meram Faculty of Medicine, Department of Child and Adolescent Psychiatry, Meram, Konya - Turkey

Phone / Telefon: +90-332-223-7930

Email address / Elektronik posta adresi:
cocukergen@yahoo.com

Date of receipt / Geliş tarihi:
March 25, 2012 / 25 Mart 2012

Date of acceptance / Kabul tarihi:
March 3, 2013 / 3 Mart 2013

INTRODUCTION

Frequency of Cesarean delivery (CD) has been increasing in our country likewise the rest of the world in recent years. In United Kingdom and United

States, more than 20% of births were by CD (1). Whereas in Turkey it is reported that CD rates reach 40% in some centers, which was found to be 21.2% in Turkey Population and Health Care Research in 2003 (2,3). Impact of CD on mother's psychological state and

mother-baby interactions constituted the scope in several studies (4-7).

Delivery is a complex life event in which impactful biological, psychological and social changes are experienced by mothers. Pregnancy and delivery process in women with biological predisposition and/or psychosocial sensitivity may lead to psychiatric disorders such as depression. Post-partum depression (PPD) frequency is reported to be 10-15% (8,9). History of depression, lack of social support, stressful life events and health problems of baby were reported as the risk factors for PPD (10,11). There are many studies evaluating the relationship of delivery type with PPD in the literature. While some of these studies reported relation with CD and PPD, some of these studies did not find any relation (5,6).

Mother's attachment to her baby lovingly is one of the most important items that promote the healthy development of the child.

If a secure attachment is not established between the mother and the baby in the first year of life, baby may experience emotional, social, physical and mental problems. PPD was proved to possess negative outcomes over the baby's emotional, behavioral and cognitive development as well as the attachment style (12). Also in studies exploring the association of delivery type and mother-infant interaction, CD was reported to have negative effects over the attachment style (4,7).

The aim of this study was to investigate the relationship between delivery mode and postpartum depression, perceived social support, and maternal attachment.

METHOD

Sample

Sample of the study was constituted by the mothers of infants, who applied for fifth month visit and followed-up at the Neonatology Outpatient Clinic of Meram Faculty of Medicine. Inclusion criteria of the study are as follows: 1) Mothers were being between 18 and 35 years of age 2) baby's birth weight is 2500 gram and above, 3) baby's gestational age is 37 weeks and

above, and 4) Mother's literacy level were being able to read the assessment tools. Exclusion criteria for the study are as follows: 1) Mother's receiving any psychiatric treatment in the last three months, 2) Mothers' cognitive failure, and 3) Babies with any congenital disease. The objectives and procedures of the study were explained to all mothers and upon their agreement, written informed consent forms were obtained.

Data collection process was conducted by a neonatologist and a psychiatrist. The mothers were invited to complete the following standardized self-report measures. The study was approved by the ethics committee of Meram Faculty of Medicine, Konya, Turkey.

Interview Form

This form included questions about the demographic characteristics of the infants (gestational age, gender, birth, duration of hospital stay and delivery type), and the mothers (such as age, education level, marital status, occupation and parity).

Edinburgh Postpartum Depression Scale (EPDS): The EPDS is a 10-item self-report scale to measure depressive symptoms during the postpartum period (13). Each item scored on a 4-point scale (0 to 3) and total score calculated. The EPDS is the most frequently used scale for screening and assessment of postpartum depression. The validity and reliability study of the Turkish version was made by Engindeniz et al. (14) and the cut-off point was determined as 12.

Multidimensional Scale of Perceived Social Support (MSPSS): The MSPSS is a 12-item self-report scale that was developed to measure perceived social support by Zimet et al. (15). Respondents answer items on a 7-point Likert-type scale. The possible score range is between 12 and 84. Higher scores indicate higher levels of perceived social support. The validity and reliability of its Turkish version was done by Eker and Arkar (16).

Maternal Attachment Scale (MAS): With the object to analyze mother's attachment toward her baby

developed by Müller (17). MAS is a 26 item, 4-point Likert-type scale. Each of the articles encompasses direct statements and an overall score is derived from the sum of the entire divisions. The possible score range is between 26 and 104. High score indicate strong maternal attachment. The validity and reliability study of the Turkish version was made by Kavlak et al (18).

Statistical Analysis

The study data were analyzed with Statistical Package for the Social Sciences (SPSS) 17.0 for Windows. Categorical variables between the groups were compared with the chi-square test and Fisher's Exact Test, as necessary. To analyze continuous variables between the same patient groups, t test was used. Pearson correlation tests were used for correlation analyses in normally and abnormally distributed parametric variables. Two tailed $p < 0.05$ was accepted as statistically significant.

RESULTS

Forty females, who had vaginal delivery and 40 females, who had cesarean delivery were recruited to

the study. Table 1 shows demographic characteristics of the groups. There were no significant differences in maternal age, maternal education, baby's age, baby's delivery week, baby's weight and baby's delivery weight between the groups (Table 1).

EPDS scores did not differ between VD and SD groups (4.07 and 4.47 respectively; $p = 0.695$). The mean depressive score (EPDS > 12) of mothers with CD was higher than that of mothers with VD, but there were no significant differences. The MSPSS showed that the mothers with SD had lower perceived social support compared to the mothers with VD, but differences were not significant (72.45 and 77.02 respectively; $p = 0.055$). Maternal attachment was significantly lower in the mothers with CD (98.77 and 101.82 respectively; $p = 0.047$). Comparison of two group's EPDS, MSPSS and MAS mean scores are showed in Table 2.

Pearson's correlation analysis showed that MSPSS score was negatively correlated with EPDS ($r = -0.526$; $p < 0.001$) and positively correlated with MAS scores in the mothers with CD ($r = 0.423$; $p = 0.007$). Furthermore, statistically significant negative correlations were found between the EPDS and MAS ($r = -0.591$, $p < 0.001$). No statistically significant

Table 1: Demographic characteristics of groups

	Vaginal Delivery n=40	Cesarean Delivery n=40	p
Maternal age (years)	28.60±3.11	29.00±3.67	0.601
Maternal education (year)	9.85±3.94	9.27±3.84	0.511
Paternal age (year)	31.38±4.05	31.62±4.53	0.796
Gender of baby male (n, %)	20 (50%)	22 (55%)	0.654
Baby's age (weeks)	24.22±2.46	23.72±2.74	0.394
Gestational age (weeks)	38.50±0.33	38.42±0.31	0.801
Weight (grams)	6727±834	6788±975	0.764
Birth weight (grams)	3125±420	3180±462	0.581

Table 2: Comparison of two group according to EPDS, MSPSS and MAS mean scores

	Vaginal delivery n=40	Cesarean delivery n=40	p
EPDS (Mean±SD)	4.07±4.12	4.47±4.92	0.695
EPDS (score >12) (n, %)	2 (5.0%)	6 (15.0%)	0.263
MSPSS	77.02±8.03	72.45±12.44	0.055
MAS	101.82±3.72	98.77±8.72	0.047*

EPDS: Edinburg Postpartum Depression Scale, MSPSS: Multidimensional Scale of Perceived Social Support, MAS: Maternal Attachment Scale, *Statistically significant differences

correlation was found between the maternal age, maternal education, baby's age, baby's delivery week, baby's weight, baby's birth weight and EPDS, MSPSS and MAS scores ($p > 0.05$).

DISCUSSION

In our study, we found no significant differences in postpartum depression and perceived social support scores between the two groups. On the other hand, MAS scores were significantly lower in CD women.

Carter et al. (6), stated out that there was no relationship between CD and PPD in their meta-analysis including 24 studies. Similarly, in a study based on large samples over 1897 women executed by Sword et al., (19), CD has been found not a risk factor for depression in the sixth week of postpartum. Also, Patel et al. (20) reported that delivery type was ineffective over PPD in their study performed over 10,934 women. Additionally in one of the review article, delivery type is said to have negligible effect on PPD, apart from delivery type factors that (such as stressful life events, low social support, depression history) were stressed to have more substantial effects (5). In our study, in compliance with the recent literature, no significant differences were found between the two groups in terms of PPD scores and depression frequency.

In the literature there are also some studies showing that CD was a risk factor for the PPD (5,6,21,22). However, most of these studies were conducted in the early 1980s and 90s.

In recent years, developments in CD-related medical procedures (eg, use of local anesthesia instead of general anesthesia, better pain management), and the reduction of prejudice in society, converted CD into a more acceptable and satisfactory option among women (23). CD related satisfaction in women is thought to reduce susceptibility to postpartum depressive symptoms (5). The attachment is a behavioral pattern exhibiting the sensational interaction between mother and baby. It has been shown in many studies that maternal depression has negative effects on the attachment.

It is demonstrated that depressed mothers were less

sensitive and had more negative interactions with their children compared to non-depressed mothers (24,25). In our study, statistically significant negative correlations were found between the postpartum depression and maternal attachment.

Mothers with CD are reported to have less pleasure in their interactions with babies and to be more angry and hostile against their babies in postpartum periods (26,27). In contrast to CD, oxytocin is released from posterior pituitary and consequently uterine contractions and vaginocervical stimulation occur during VD. Oxytocin is a hormone associated with maternal behaviors (28). In animal studies, post CD vaginocervical stimulation is reported to increase maternal behavior (29). Swain et al. (30), demonstrated that brain activity of parenting related areas (temporal gyrus, caudate nucleus, thalamus, hypothalamus, amygdala), increases in mothers with VD than CD during their babies cry. In our study, maternal attachment in mothers with CD was lower than VD. CD may negatively affect maternal attachment because of physiological differences during delivery.

Social support has been identified as economical, emotional or cognitive support provided to a person from the others (31). Social support protects mental health by reducing or balancing the negative effects of life events that create stress. Lack of social support in various studies has been shown to be associated with the PPD (32,33). Our study showed that perceived social support was negatively correlated with PPD and positively correlated with maternal attachment. Providing social support is known to have positive effects on both depression in mothers and the mother-infant relationship.

Social support provided by spouse, family and relatives, comforts new mother emotionally and cognitively, thus helps to cope with stressors easier, and ensure to perform the role of motherhood more effectively (34,35).

Outcomes of our study must be evaluated in their limitations. The main limitations of this study include relatively small sample, findings relied on self-report measures and cross-sectional nature of the study. More advanced studies exploring the outcomes of delivery

type over postpartum depression and mother-baby interactions in large samples, longitudinal and possessing diagnostic assessments are required.

Pediatricians should be more careful about depressive symptoms of mothers of newborn infants and should refer them for counseling psychiatrist when it is

necessary, because it's important for both mother's mental health and mother-baby interactions.

The results of our study support that type of delivery had no impact on the development of postpartum depression. In addition, the CD may have a negative impact on maternal attachment.

REFERENCES

1. Thomas J, Paranjothy S. National Sentinel Caesarean Section Audit Report. London: Royal College of Obstetricians and Gynaecologists; Clinical Effectiveness Support Unit; 2001.
2. Yilmaz M, Isaoglu U, Kadanali S. Investigation of the caesarean section cases in our clinic between 2002 and 2007. *Marmara Medical Journal* 2009; 22:104-110. (Turkish)
3. Coskun A, Kostu B, Ercan O, Kiran H, Guven MA, Kiran G. The comparison of deliveries in the center of Kahramanmaraş in 2004 and 2006. *Journal of Turkish Obstetric and Gynecology Society* 2007; 4:168-172. (Turkish)
4. DiMatteo MR, Morton SC, Lepper HS, Damush TM, Carney MF, Pearson M, Kahn KL. Cesarean childbirth and psychosocial outcomes: a meta-analysis. *Health Psychol* 1996; 15:303-314.
5. Clement S. Psychological aspects of caesarean section. *Best Pract Res Clin Obstet Gynaecol* 2001; 15:109-126.
6. Carter FA, Frampton CM, Mulder RT. Cesarean section and postpartum depression: a review of the evidence examining the link. *Psychosom Med* 2006; 68:321-330.
7. Lobel M, DeLuca RS. Psychosocial sequelae of cesarean delivery: review and analysis of their causes and implications. *Soc Sci Med* 2007; 64:2272-2284.
8. O'Hara MW, Swain AM. Rates and risk of postpartum depression – a meta-analysis. *Int Rev Psychiatry* 1996; 8:37-54.
9. Danaci AE, Dinc G, Deveci A, Sen FS, Icelli I. Postnatal depression in Turkey: epidemiological and cultural aspects. *Soc Psychiatry Psychiatr Epidemiol* 2002; 37:125-129.
10. Beck CT. Predictors of postpartum depression: an update. *Nurs Res* 2001; 50:275-285.
11. Robertson E, Grace S, Wallington T, Stewart DE. Antenatal risk factors for postpartum depression: a synthesis of recent literature. *Gen Hosp Psychiatry* 2004; 26:289-295.
12. Luoma I, Tamminen T, Kaukonen P, Laippala P, Puura K, Salmelin R, Almqvist F. Longitudinal study of maternal depressive symptoms and child well-being. *J Am Acad Child Adolesc Psychiatry* 2001; 40:1367-1374.
13. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale (EPDS). *Br J Psychiatry* 1987; 150:782-786.
14. Engindeniz AN, Kuey L, Kultur S. Validity and reliability of Turkish version of Edinburgh Postnatal Depression Scale. *Book of Annual Meeting of Psychiatric Association of Turkey. Turkish Psychiatric Association Press, Ankara, 1996; 51-2.*
15. Zimet GD, Dahlen NW, Zimet SG. The multidimensional scale of perceived social support. *J Pers Assess* 1988; 52:30-41.
16. Eker D, Akar H. Factorial Structure, Validity, and Reliability of Multidimensional Scale of Perceived Social Support. *Turkish Journal of Psychology* 1995; 34:45-55. (Turkish)
17. Müller ME. A questionnaire to measure mother-to-infant attachment. *J Nurs Meas* 1994; 2: 129-141.
18. Kavlak O, Sirin A. The Turkish version of Maternal Attachment Inventory. *The International Journal of Human Sciences* 2009; 6:188-202. (Turkish)
19. Sword W, Landy CK, Thabane L, Watt S, Krueger P, Farine D, Foster G. Is mode of delivery associated with postpartum depression at 6 weeks: a prospective cohort study. *BJOG* 2011; 118:966-977.
20. Patel RR, Murphy DJ, Peters TJ. Operative delivery and postnatal depression: a cohort study. *BMJ* 2005; 330:879.
21. Hannah P, Adams D, Lee A, Glover V, Sandler M. Links between early post-partum mood and post-natal depression. *Br J Psychiatry* 1992; 160:777-780.
22. Green J, Coupland V, Kitzinger J. Expectations, experiences, and psychological outcomes of childbirth: a prospective study of 825 women. *Birth* 1990; 17:15-24.
23. Wax JR, Cartin A, Pinette MG, Blackstone J. Patient choice cesarean: an evidence-based review. *Obstet Gynecol Surv* 2004; 59:601-616.
24. Martins C, Gaffan EA. Effects of early maternal depression on patterns of infant-mother attachment: a meta-analytic investigation. *J Child Psychol Psychiatry* 2000; 41:737-746.

25. Murray L, Fiori-Cowley A, Hooper R, Cooper P. The impact of postnatal depression and associated adversity on early mother-infant interactions and later infant outcome. *Child Dev* 1996; 67:2512-2526.
26. Cranley MS, Hedahl KJ, Pegg SH. Women's perceptions of vaginal and cesarean deliveries. *Nurs Res* 1983; 32:10-15.
27. Tulman LJ. Initial handling of newborn infants by vaginally and cesarean-delivered mothers. *Nurs Res* 1986; 35:296-300.
28. Kendrick KM. Oxytocin, motherhood and bonding. *Exp Physiol* 2000; 85 Spec No:111-124.
29. Porter RH, Duchamp G, Nowak R, Daels PF. Induction of maternal behavior in non-parturient adoptive mares. *Physiol Behav* 2002; 77:151-154.
30. Swain JE, Tasgin E, Mayes LC, Feldman R, Constable RT, Leckman JF. Maternal brain response to own baby-cry is affected by cesarean section delivery. *J Child Psychol Psychiatry* 2008; 49:1042-1052.
31. Ozturk H, Sirin A. Perceived Social support factors and other associated factors in puerperants. *Journal of Ege University Nursing Faculty*. 2000; 16:31-40. (Turkish)
32. Doering LV, Moser DK, Dracup K. Correlates of anxiety, hostility, depression, and psychosocial adjustment in parents of NICU infants. *Neonat Netw* 2000; 19:15-23.
33. Virit O, Akbas E, Savas HA, Sertbas G, Kandemir H. Association between the level of depression and anxiety with social support in pregnancy. *Archives of Neuropsychiatry* 2008; 45:9-13. (Turkish)
34. Lau R, Morse CA. Parents' coping in the neonatal intensive care unit: a theoretical framework. *J Psychosom Obstet Gynecol* 2001; 22:41-47.
35. Lee T, Holditch-Davis D, Miles S. The influence of maternal and child characteristics and paternal support on interactions of mother and their medically fragile infants. *Res Nurs Health* 2007; 30:17-30.