

ORIGINAL RESEARCH

Medicine Science 2018;7(4):728-32

An analysis of the relationship between insomnia-fatigue levels of the mothers and their depression and maternal attachment status

Songul Aktas¹, Dilek Kucuk Alemdar²

¹Karadeniz Technical University, Faculty of Health Science, Department of Birth, Women Health and Disease Nursing, Trabzon, Turkey

²Giresun University, Faculty of Health Science, Department of Midwifery, Giresun, Turkey

Received 17 April 2018; Accepted 20 April 2018

Available online 28.04.2018 with doi: 10.5455/medscience.2018.07.8789

Copyright © 2018 by authors and Medicine Science Publishing Inc

Abstract

The study was conducted to investigate the relationship between the insomnia-fatigue levels of the mothers with infants and their depression and maternal attachment status. The universe of this descriptive study consisted of the mothers with infants who applied to a state hospital in the north of Turkey with the mothers admitted to the pediatric polyclinic. The sample comprised 194 mothers who were selected by a simple random sampling method and who agreed to participate in the study. In the G power analysis, the sample calculation was performed based on the relationship between two means. As a result of the analysis, the sample was calculated as 178 people. This number was increased to 194 to improve the power of the research. As data collection tools, a Mother Introductory Information Form for descriptive features, Brief Fatigue Form, Sleep Status Rating Scale for Mothers, Beck Depression Scale and Maternal Attachment Scale were used. In the statistical analysis, arithmetic means, standard deviations and percentages were used for descriptive variables. Spearman correlation analysis was used to examine the relationships between the quantitative variables. The average age of the mothers was found as 29.28 ± 5.52 and 52.7% of them were primary school graduates. 86.1% had planned pregnancy and 64.9% had a cesarean section. 68.7% of the mothers stated that they could take their baby on their laps more than one hour and 45.6% were breastfeeding them. It was determined that the mean fatigue scores of the mothers were 4.33 ± 2.56 , the mean insomnia score was 4.23 ± 1.24 , the Beck depression score was 14.01 ± 11.06 and the maternal attachment score was 99.22 ± 6.74 . In our study, there was a significant weak relationship in the positive direction between maternal fatigue and insomnia levels and depression status ($p < 0.05$) and no significant relationship between maternal fatigue and insomnia levels and maternal attachment status ($p > 0.05$). It was determined that there was a weak correlation in the positive direction between the fatigue-insomnia levels and the depression status of the mothers. In the light of these results, by identifying the factors that cause fatigue and insomnia, it could be suggested to prevent the maternal depression and to strengthen maternal attachment of the mothers with infants aged 2-6 months through social support provided by health professionals.

Keywords: Postpartum, infant, fatigue-insomnia, depression, maternal attachment, health professionals

Introduction

Fatigue has an important place among the postpartum complaints. Postpartum fatigue is a condition of discomfort, disability and negative feelings associated with psychological, physiological and situational factors. [1-3]. Bozoky and Corwin (2002) is stated that fatigue is more common than postpartum depression symptoms, and its early prediction and prevention could be possible [4]. In the study of Mc Queen (2003), the mothers were reported to have more fatigue after the postpartum period than during the postpartum period [5]. It is stated in the literature that maternal fatigue is 42.0%, 59% and 54% within 2 weeks, 8 weeks, and 18 months after birth respectively [5]. The some studies show that fatigue in mothers is more frequent after childbirth [5, 6]. This fatigue can negatively affect the health of both mothers and their babies. A prolonged fatigue can negatively affect maternal healing

after childbirth, maternal behavior, baby care, the relations with family members, work performance, self-fulfillment behavior and breastfeeding [6].

The infant's sleep patterns may also lead to fatigue of mothers. Excessive fatigue means that mother's sleep needs cannot be fulfilled adequately. Whereas mothers' night sleep needs increase more than past after the birth [7]. Especially if the mother has other children to look after, her workload will increase and she may experience more insomnia. Prolonged insomnia can cause developmental crisis and depression in the mother [3,5].

Depression, a commonly seen psychological health problem across the world, prevents the functionality, creativity, happiness, and satisfaction of individuals, reduces their quality of life, and leads to losses in the work force [8,9]. Apart from insomnia and fatigue, there are some other obstetric factors that cause mothers to have depression [2,10]. They include risky pregnancy, unwanted pregnancy, depression in pregnancy [9], traumatic birth experience with low satisfaction [11], being a mother for the first time, newborn incubation [10], anomalous birth of the baby [12], birth

*Corresponding Author: Songul Aktas, Karadeniz Technical University, Faculty of Health Science, Department of Birth, Women Health and Disease Nursing, Trabzon, Turkey
E-mail: songulbora@mynet.com

mode, difficulty in baby care, lack of social support, infantile colic, infectious diseases, and receiving negative medical diagnosis and increase the probability of maternal depression [2,10].

The depression can lead to maternal sleep deprivation and insufficient maternal attachment (emotional connection between mother and baby) as well as affecting mothers' mental health negatively [13]. Insufficient maternal attachment influences both the present and the future mental and physical health of the baby in a negative way due to the breastfeeding problems and the lack of positive interaction between mother and baby [14,15]. In a study conducted by Reck et al. in Germany, it was determined that about 30% of the mothers who were diagnosed with depression had a problem with attachment with their babies [16]. Therefore, an early detection and the support of mothers who are depressed are very important for the health of mother-newborn and family [2,8]. This study aimed to investigate the relationship between fatigue-insomnia levels of the mothers after postpartum period and maternal attachment and depression. There has not yet been another study conducted in our country for this purpose.

Material and Method

The type of this study is descriptive and it was conducted between May and October 2017 at a state hospital in the north of Turkey with the mothers admitted to the pediatric polyclinic. The sample was determined by the simple random sampling method and the number of samples was determined by G power analysis. In the G power analysis, the sample calculation was performed based on the relationship between two means. In the calculation, bi-directional correlation was used, and type 1 error rate was taken as (α) = 0.05, and the power of the study ($1 - \beta$) was taken as 0.90. As a result of the analysis, the sample was calculated as 178 people. Based on the probability of the missing data and the likelihood that the sample will better represent the universe, the data were collected from 194 pregnant women.

The inclusion criteria for sampling in the study were being literate, being volunteer to participate in the research, being over 18 years old, being a mother with infants aged 2-6 months old, being admitted to the pediatric polyclinic, having given a term and healthy birth (38-42 gestational weeks, born in 2500-4000 grams, presented no known congenital disease) and being a mother without any visual and hearing impairment, not have psychiatric disease of mother. The exclusion criteria for sampling in the study included the mothers with infants previously diagnosed with colic and treated for it, twins and the babies with harelips and Wolf-Hirschhorn syndrome.

The reason for choosing the mothers with infants aged between 2 and 6 months in this study was partially because of the intention to assess the depression status of the mothers separately from the postpartum period (first 6-8 weeks after childbirth) and examine the relationship between the maternal attachment levels of mothers and their insomnia and fatigue in this period. In addition, it is recommended that the first 6 months babies are fed only with breast milk. The relationship between breastfeeding and maternal attachment was also taken into consideration.

Data Collection

The data were collected from the mothers who applied to the

pediatric polyclinic of the relevant hospital using five forms. These were;

Mother Introductory Information Form (MIIF): It consists of 12 questions prepared by the researcher scanning the literature, including the socio-demographic (age, education etc.) and obstetric (the type and number of births, the previous birth type etc.) characteristics of the mothers. This form was collected by a face to face interview method.

Brief Fatigue Inventory (BFI): To determine the level of fatigue, the (BFF) developed by the Anderson Cancer Center was used. The Cronbach alpha internal consistency coefficient of the BFF that was found appropriate for Turkish society by Çınar et al. (2000) was determined as 0.98 [15]. It includes the general fatigue levels (the fatigue experienced during the application of the questionnaire, the general fatigue experienced during the last 24 hours and the worst fatigue during the last 24 hours) and the level of its influence on the daily activities in the last 24 hours (general activity, mood, walking skills, work life, the relations with other people, the joy of life). It is a likert type scale consisting of nine items questioning the level of influence. The scoring is between "0" and "10". "0" indicates not being influenced at all, "1-3" refers to a low level of fatigue, "4-6" indicates a middle level of fatigue, and "7-9" indicates the highest level of fatigue. Each item can be calculated individually in the BFF or total scores can be calculated as is in this study.

Sleep Status Rating Score for Mothers: This scale was prepared in the light of the literature by researchers and was used to evaluate the sleep status of the mothers [3]. To assess mother's general sleep status, a scoring between 0 (I could not sleep at all) - 10 (I slept very well) is used.

Beck Depression Inventory (BDI): The BDI was developed by Beck et al. (1961) [17] and includes 21 self-evaluation statements about the depression and each item scores from 0 to 3. The aim of the inventory is not to diagnose depression but to measure the severity of the depression symptoms objectively. A score between 0 and 9 indicates no depression; a score between 10 and 16 indicates a mild level of depression; a score between 17 and 24 indicates a moderate level of depression; and a score of 25 or higher indicates a severe level of depression (major). The highest score to be obtained from the inventory is 63. The Turkish adaptation, reliability, and validity tests of the inventory were performed by Hisli and the cut-off point in the study was accepted as 17 [18]. A score of ≥ 17 detects depressive symptoms that require a medical treatment with an exactness of 90%.

Maternal Attachment Inventory (MAI): This scale which determines the level of attachment between mother and baby was developed by Muller and adapted to Turkish by Kavlak (2004) [19]. There are 26 statements in MAI that the individuals can use to express their feelings. According to the severity of the feelings the mothers feel towards their babies, the scores of the expressions are calculated as follows; Always (a) = 4 points, Frequently (b) = 3 points, Sometimes (c) = 2 points and Never (d) = 1 point. A total score is obtained for all the items. The high scores indicate that maternal attachment is high. The lowest score to be obtained from the scale ranges from 26 to 104.

Data Analysis

The data were analyzed using SPSS 21.0 software package. In the statistical analysis, arithmetic means, standard deviations and percentages were used for descriptive variables. Spearman correlation analysis was used to examine the relationships between the quantitative.

Ethical considerations

Permission from the related institution and verbal and written consent from the mothers were obtained before the research. In the study, the related ethical principles of “Informed Consent Policy,” “Volunteer Policy,” and “Privacy Protection Policy” have been fulfilled since the use of human subjects requires the protection of individual rights.

Results

The results showed that 44.3% of the mothers participating in the study were between 25 and 29 years old, and 55.2% were primary school graduates. 86.17% of them reported to have planned pregnancy, 37.6 % were primiparous women and 64.9% gave birth by caesarean section. The gestational age, birth weight and birth height of the babies were between normal values. The average age of the babies was 2.96 ± 1.81 month old and 45.7% were fed only with breast milk (Table 1).

Table 1. Distribution of Socio-Demographic Characteristics of Mothers and Their Infants (N=194)

Characteristics	n %
Infants Gender	
Girl	106 (54.6)
Boy	88 (45.4)
Birth	
Spontaneous	68 (35.1)
Section	126 (64.9)
Diet	
Breastfed	90 (45.6)
Formula+Breastfed	64 (34.2)
Formula	40 (20.2)
	Mean (Standard Deviation)
Gestational age (weeks)	38.69 (2.02)
Postnatal age (mounth)	2.96 (1.81)
Mothers	n %
Mean age, year [29.28 (5.52)]	
20-24	25 (16.9)
25-29	86 (44.3)
30 and above	83 (42.8)
Education	
Primary school	107 (55.2)
Middle school	38 (19.6)
University level	49 (25.3)
Planning Status of Pregnancy	
Yes	167 (86.1)
No	27 (13.9)
Number of children	
1	73 (37.6)
2	62 (32.0)
3 ↑	59 (30.4)
Time to start breastfeed	
First 30 minute	61 (31.3)
61 minute ↑	133 68.7)
Infants Slept 10 Time	
10 h ↓	118 (60.8)
11-15 h	54 (27.8)
16 h ↑	22 (11.3)

When the average scores of the mothers were examined it was found that fatigue was 4.33 ± 2.56 , insomnia was 4.23 ± 1.24 , depression was 14.01 ± 11.06 , and maternal attachment was 99.22 ± 6.74 (Table 2).

Table 2. The mean scores of the mothers in The Sleep Status Rating Scale, Brief Fatigue Inventory, Beck Depression Scale and Maternal Attachment. (N=194)

	Minimum	Maximum	Mean	Standard Deviation
Sleep Status Rating Score	0.00	10.00	4.33	2.56
Brief Fatigue Inventory	1.00	6.00	4.23	1.24
Beck Depression Scale	0.00	54.00	14.01	11.06
Maternal Attachment Inventory	78.00	104.00	99.22	6.74

In our study, a negative correlation was found between the average depression scores of the mothers and their sleep status ($p < 0.05$), while a weak relationship in the positive direction was found between the average depression scores and their fatigue status ($p < 0.05$). In our study, there was no relationship between the average maternal attachment scale scores and mothers' sleep status rating scales of and their fatigue scores ($p > 0.05$) (Table 3).

Table 3. An analysis of the relationship between the mean scores of depression and maternal attachment total scores of the mothers and their sleep status rating scales and fatigue total scores (N = 194)

	Beck Depression Scale		Maternal Attachment Inventory	
	r	p-Value	r	p-Value
Sleep Status Rating Score	-0.174	0.01*	-0.057	0.48
Brief Fatigue Inventory	+ 0.204	0.00*	-0.174	0.15

Discussion

In this study it was determined that the mothers had moderate fatigue and insomnia levels (Table 2). Mothers may experience fatigue with insomnia. Fatigue can negatively affect newborn care as well as the risk of delay in physical recovery, decrease in self-care and increase in health problems [20]. There are some studies in the literature that indicate that as the postpartum period progresses, fatigue and insomnia can reduce as well as opposite studies [5, 21]. Considering the fact that the majority of the mothers in our study delivered by cesarean section, it could be thought that these mothers might have more fatigue than those having vaginal births (Table 1).

In a study by Karen et al. (1998) the parameters of sleeping habits of breastfeeding primiparous mothers 3 days, 3 weeks, 6 weeks and 9 weeks after the birth, perceived stress, fatigue, breastfeeding experiences and neonatal mobility were investigated and the relationship of fatigue with each of these parameters was determined. This study demonstrated that as the mobility of the baby increased, the sleep disturbances and the fatigue of the mothers increased and the breastfeeding behavior was adversely affected [22]. In our study, 45.6% of babies did not need an additional preparation because they were breastfed and 39.2% of them had a total sleep time of 11 hours or more per day (Table 1). This situation was thought to contribute positively to the prevention of fatigue and insomnia in severe levels by increasing the possibility of mothers' resting. Tackett, Cong, and Hale (2011) found that the mothers with babies aged 0-12 months old and those fully breastfed were less tired than those who fed their babies in

other forms of food (formula etc) and felt physically better [23]. Contrary to this study, Downs et al. (2010) determined that there was no difference between the fatigue status of mothers who breastfed their babies for 2- 12 weeks, those who fed with Formula and those who used two methods [24]. On the other hand, it should be kept in mind that the fatigue perception of the mothers will be individual; the breastfeeding in some mothers may increase the fatigue in the mothers and can cause the breastfeeding to be left [25,26].

Our study demonstrated that the mothers showed mild depressive symptoms (near moderate) (Table 2). It is a pleasing finding that the average depression scores of the mothers were below the cut-off point of 17. This finding is similar to some studies [2,10]. However, the presence of mothers who tend to have mild or moderate depression during this period requires health care staff to be more attentive to this group. The early detection of these mothers bearing the risk of depression and the provision of necessary psycho-social support are important for mother and family health [2,27].

The factors such as positive birth experience, skin contact immediately after birth, first breastfeeding, duration of breastfeeding, baby's feeding style increase maternal attachment [14, 15]. In our study, when maternal attachment to infants was examined, it was found to be very high. This finding was consistent with the finding that showed that maternal depressive symptoms were low and insomnia and fatigue were not at high levels. The fact that there were healthy newborns, planned pregnancies, multiparous mothers who were experienced about baby care in our study were thought to be effective on high maternal attachment. Maternal attachment is especially affected by maternal depression [14]. In a study conducted at the University of Heidelberg, the maternal attachment levels of the mothers with depressive symptoms for four months postpartum was reported to be low [21]. In our study, the high maternal attachment score of the mothers could be due to the mild depression of the mothers.

The presence of maternal sleep disorders is directly related to depression [2, 26]. The fact that the mother is depressed negatively affects both maternal attachment and the present and future mental and social health of the baby [13]. In our study, there was a weak relationship between the average depression scores of the mothers and their sleep status rating scores in the negative direction ($p < 0.05$) and a weak relationship between the average depression scores of the mothers and the fatigue status in the positive direction ($p < 0.05$). This finding is consistent with the literature [14,20,27]. In study Dennis and Rose's (2005) was determined that the infant sleep patterns and maternal fatigue were strongly associated with a new onset of postpartum depressive symptoms [28]. For this reason, ensuring that mothers sleep enough by being well supported by the family and social environment, especially spouses in infant care, will contribute to reducing both fatigue and preventing depression. In our study, there was no relationship between the average maternal attachment scale scores and mothers' sleep status rating scales of and their fatigue scores ($p > 0.05$). However, it is emphasized in the literature that as the fatigue level increases, sleep quality may deteriorate and maternal attachment may be weakened. Maternal fatigue can negatively affect maternal attachment, leading to the inability to deal adequately with the baby [14,29,30] due to the

reduction of self-care power and breastfeeding self-efficacy [31].

Limitations of the study

This study was conducted with the mothers who had healthy babies aged 2-6 months old with no known psychiatric problems.

Implication for practice

The causes of excessive insomnia and fatigue of the mothers who have infants between 2 to 6 months should be identified and social - medical support should be provided by health professionals. Home visits to mothers should be performed by the family health workers. During these visits, mothers should be evaluated in terms of breastfeeding self-efficacy and depression. At 2-6 months' baby follow up (vaccination, growth etc.) health professionals (midwife, nurse, doctor) should also evaluate mothers in terms of sleep, fatigue, mood and mother-infant interaction. In this way, risky situations of mothers' such as the depression and insufficient maternal attachment can be identified early. Additionally, it is suggested to provide fathers' involvement in the care of the baby and thus further resting of the mothers.

Conclusion

In this study, insomnia and fatigue in the mothers with 2 to 6 month old babies were found to have a tendency to increase depression, and to reduce maternal attachment. It is suggested this study is to carry out with a larger population.

This study was presented as verbal presentation in 1. International 5. National Sivas Midwifery Sempoium, on 24-26 April 2018.

Competing interests

The authors declare that they have no competing interest.

Financial Disclosure

The financial support for this study was provided by the investigators themselves.

Ethical approval

Ethical approval was obtained from the hospital administration to use the patients' data.

References

1. Troy N.W. Is the significance of postpartum fatigue being overlooked in the lives of women? The American Journal of Maternal Child Nursing, 2003; 8(4):252-7.
2. Efe ŞY, Taşkın L, Eroğlu K. Postnatal depression and effecting factors in Turkey. J Turk Ger Gynecol Assoc, 2009;10:14-20.
3. Elmas S, Aluş TM. Yenidoğanın beslenme şeklinin anne uyku ve yorgunluğuna etkisi. Dokuz Eylül Üniversitesi Hemşirelik Fak. Elektronik Derg. 2016;9(2):45-51.
4. Bozoky I, Corwin EJ. Fatigue as a predictor of postpartum depression. J Obstet Gynecol Neonatal Nurs. 2002;31(4):436-43.
5. Mc Queen A. Tiredness and fatigue in the postnatal period J Adv Nurs. 2003;42(5):463-9.
6. Mayberry LJ, Gennaro S, Strange L. Maternal fatigue: implications of second stage labor nursing care. J Obstet Gynecol Neonatal Nurs. 1999;28(2):183-9.
7. Çoban A, Yanikkerem U.E. Gebelerde uyku kalitesi ve yorgunluk düzeyi. Ege Tıp Derg. 2010;49(2):87-94.
8. Aktas S, Yesilcicek Calik K. The factors affecting depression during pregnancy and the correlation between social support and pregnancy depression. Iran Red Crescent Med J, 2015;17:1-7.

9. Yeşilççek Çalık K, Aktaş S. Gebelikte depresyon: sıklık, risk faktörleri ve tedavisi. *Psikiyatride Güncel Yaklaşımlar*, 2011;3(1):142-62. .
10. Durukan E, İlhan MN, Bumin MA, et al. 2 hafta-18 aylık bebeği olan annelerde postpartum depresyon sıklığı ve yaşam kalitesi. *Balkan Med J*. 2011;4:385-93.
11. Aktaş S. Multigravidas' perceptions of traumatic childbirth: Its relation to some factors, the effect of previous type of birth and experience. <http://www.medicinescience.org/wp-content/uploads/2018/01/53-1510518434-MS-2017-11-209.pdf>. Available online 20.01.2018.
12. Aktaş S. Gebeliğin erken dönemindeki obstetrik riskler, fetal anomaliler ve fetal sağlığın değerlendirilmesi. *Modern Tıp Kitabevi*, Ankara, Mart 2018.
13. Mutlu C, Yorbık Ö, Tanju İA, et al. Doğum öncesi, doğum sırası ve doğum sonrası etkenlerin annenin bağlanması ile ilişkisi. *Anadolu Psikiyatri Derg*. 2015;16(6):442-50
14. Lang C. Bonding, Bağlanma. Uzel N, Özbacı S. Translate Edit. 1st edit. Elsevier, Modern Tıp Kitapevi: Ankara, Turkey, 2017.
15. Cinar N, Köse D, Altinkaynak S. The relationship between maternal attachment, perceived social support and breast-feeding sufficiency. *J Coll Physicians Surg Pak*. 2015;25(4):271-5.
16. Reck C, Klier CM, Pabst K, et al. The German version of the postpartum bonding instrument: psychometric properties and association with postpartum depression. *AArch Womens Ment Health*. 2006;9(5):265-71.
17. Beck AT, Ward CH, Mendelson M, et al. An inventory for measuring depression. *Arch Gen Psychiatry*. 1961;4:561-71.
18. Hisli NA study on the validity of beck's depression inventory. *Psychol J*. 1988;6(22):118-22.
19. Kavlak O, Şirin A. Maternal bağlanma ölçeği'nin türk toplumuna uyarlanması. *Uluslararası İnsan Bilimleri Dergisi*. 2006;19(1):24-39.
20. Song JE, Chang SB, Park SM, et al. Empirical test of an explanatory. *J Adv Nurs*. 2010;66(12):2627-9.
21. Karen A, Wambach RN. Maternal fatigue in breastfeeding primipara during the first nine weeks postpartum. *J Hum Lact*. 2009;4(3):219-29.
22. Tackett KK, Cong Z, Hale TW. The effect of feeding method on sleep duration, maternal well-being, and postpartum depression. *Clinical Lactation*. 2011; 2-2: 22-26.
23. Downs HEM, Clawges HM, Santy EE. Infant feeding methods and maternal sleep and daytime functioning. *Pediatrics*. 2010;126(6):1562-8. .
24. Can R, Ege E, Akın B, Koçoğlu D. Doğum sonu ilk üç aylık dönemde annedeki yorgunluk düzeyi ve ilişkili faktörler. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi*. 2010;3(2):63-4.
25. Alp N, Mete S. Postpartum yorgunluk düzeyi ile uyku ve beslenmenin yorgunluğa etkisi. *J Anatol Nurs Health Sci*. 2008;11(4).
26. Kırcan T.S, Aydın N, Yazıcı E, et al. The depression in women in pregnancy and postpartum period: A follow-up study. *Int J Soc Psychiatry*. 2015;61(4):343-9.
27. Troy NW, Dalgas-Pelish P. The natural evolution of postpartum fatigue among a group of primiparous women. *Clin Nurs Res*. 1997;6(2):126-41.
28. Dennis, Ross. Relationships among infant sleep patterns, maternal fatigue, and development of depressive symptomatology. *Birth*. 2005;32(3):187-93.
29. Aktaş N, Karaçam Z. Doğum sonrası yorgunluk, kadının öz-bakım gücü ve ilişkili faktörler. *İzmir Tepecik Eğitim ve Araştırma Hastanesi Dergisi*. 2017;27(3):186-96.
30. Delavari M, Mohammad-Alizadeh-Charandabi S, Mirghafurvand M. The relationship between maternal-fetal attachment and maternal self-efficacy in Iranian women: a prospective study. *J Reprod Infant Psychol*. 2018;21:1-10.