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The Effects of Mothers' Anxiety and Depression on Sleep Habits of 0-3 Month's Old Infants

(0-3 Aylık Bebeklerde Uyku Alışkanlığı İle Anne Anksiyete Ve Depresyonunun Bebeğin Uykusuna Etkisi)

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Aim: This study aimed to explain infants' sleep habits and investigate the factors that may affect their sleep in the first three months after they were born.

Methods: Infants that were born between 29/10/2014-30/11/2014 dates at Department of Gynecology and Obstetrics were recruited for this study. The mothers of the infants were interviewed face to face within the three days after birth. "Baby sleep evaluation questionnaire" was filled and Edinburgh Postnatal Depression and Beck Anxiety Scale were filled out by the mothers. "Baby sleep evaluation questionnaires" and scales were applied monthly.

Results: The study included 70 infants. Average sleep duration of one month old infants was found to be 14±2.3 hours while daily average sleep duration of three month old infants was 13.7 ±2 hours. Total sleep duration of infants was in a decreasing trend from birth till the end of the 3rd month.

A significant relation was found between the mothers' anxiety and the infants' sleep quality in the second month, but not in the first or the third month (p<.05). Factors such as using a pacifier, nasal obstruction, sleep position, nurse availability or sex had no effect on mother's opinion about the baby's sleep, sleep duration, waking frequency and night time falling asleep duration.

Conclusion: Poor sleep quality reported by mothers decreases towards the third month. There is a significant relation between the mothers' anxiety and the infants' sleep quality in the second month in contrast to the first and the third month (p<.05).

Özet

Amaç: Çalışmamızda yaşamın ilk üç ayındaki uyku alışkanlıklarını açıklamak ve bu uyku alışkanlıklarını etkileyebilecek faktörleri araştırmak amaçlanmıştır.

Metot: Çalışmamızda 29/10/2014-30/11/2014 tarihleri arasında Kadın Doğum Servisi'nde doğan bebeklerin uyku alışkanlıkları değerlendirilmiştir. Bebeklerin uyku durumlarının değerlendirilmesi için doğumdan sonraki ilk 3 gün içinde taburcu olmadan hemen önce annelerle yüz yüze görüşülerek "bebek uyku değerlendirme anketi" doldurulmuş ve Edinburgh Postnatal Depresyon Ölçeği ile Beck Anksiyete Ölçeği yapılmıştır. "Bebek uyku değerlendirme anketi" ve ölçekler 3 ay boyunca aylık tekrarlanmıştır.

Bulgular: Çalışma 70 hasta ile yapılmıştır. Çalışmada yer alan bebeklerin günlük uyku süresi 1. ayda ortalama 14±2.3 saat iken 3. ayda 13.7 ±2 saate gerilemiştir. Bebeklerin günlük toplam uyku süresi doğumdan 3. ayın sonuna kadar azalma eğilimindedir. Annelerin anksiyeteleri ile ikinci aydaki bebeklerin uyku kalitesi arasında anlamlı bir ilişki bulunmuştur (p<.05), ancak aynı ilişki birinci veya üçüncü ayda bulunamamıştır.

Bebeklerin gece, gündüz ve toplam uyku süreleri ve gece uykuya dalma süreleri bebeğin cinsiyetine, bebeğin bakımına yardım eden kişinin varlığına, emzik kullanma durumuna, burun tıkanıklığına, bebeğin yatış pozisyonuna göre farklılık göstermemiştir.

Sonuç: Anneler tarafından bildirilen düşük uyku kalitesi üçüncü aya doğru düşmektedir. Annelerin anksiyetesi ile bebeklerin uyku kalitesi arasında ikinci ayda birinci ve üçüncü ayın aksine anlamlı bir ilişki vardır ($p < .05$).

Key words: *infant, sleep habits, 0-3 months old, anxiety, maternal depression*

Anahtar kelimeler: *bebek, uyku alışkanlığı, 0-3 aylık bebek, anksiyete, anne depresyonu*

Introduction

Sleep and related issues are crucially important for subject's quality of life (1). Irregular sleep habits and short sleep duration during infancy affect infant's physical, mental and social integrity negatively (2). The aim of this study was to evaluate sleep habits in the first three months of life and to examine affecting factors and identify affecting factors related to the mother or the environment before the sleep problem occurs. Whether post-partum depression and anxiety have an impact on sleep habits of the infants was also examined.

Methods

The present study evaluated the sleep habits of the infants that were born in the Obstetrics and Gynecology Department during a month's period. The study was started with 102 mother-infant pairs. Two infants who were hospitalized during the study period were excluded. 4 mother-infant pairs who participated in the study were excluded due to mothers' inability to collect data. 26 mothers were excluded from the study because they could not be contacted again and the study was completed with a total of 70 mother-infant pairs.

Survey

In order to examine the infants' sleep, the mothers were interviewed face to face to fill up the "infant sleep evaluation questionnaire" during the first three days after birth. The questionnaire includes questions about infants' sleep and mothers' opinions on the infant's sleep. A "sleep diary" was given to the mothers to keep a log during a day period in every week of each month. At the end of each month, the mothers were interviewed to fill up "infant sleep evaluation questionnaire", Edinburgh Depression Scale and Beck Anxiety Inventory. The data were gathered until the end of three months.

Statistical Analysis

All statistical data were analyzed using the Statistical Package for the Social Sciences Program, SPSS 15.00. Descriptive statistics were given as mean numeric values (\pm) standard deviations, median (min; max), frequency distribution and percentages (%). For statistical analysis, Pearson's Chi Square Test and Yates' Correction Chi Square Test were utilized for categorical variables. In the analysis in which the variables were used as dependent variables, Mann-Whitney U test or Student-T test were used according to the data distribution's correspondence to normal distribution. As the data on sleep duration and waking up numbers were calculated for three times, Analysis of Variance was used in repeated measures. Statistical significance was determined as $p < 0.05$.

Results

This study included 70 infants, 37 (53%) boys and 33 (47%) girls. 45.7% of infants had no other siblings, 38.6% had one sibling, and 15.7% had two or more siblings. (see Table 1).

Table 1 here

While the daily sleep duration of the infants in the study group was 14 ± 2.4 hours during the first and second months, it dropped to 13.7 ± 2.0 hours in the third month. While daytime sleep

duration was 6.8 ± 1.3 hours in the first month and it dropped to 6.0 ± 1.5 hours in the third month ($p=0.047$). Night time sleep duration increased from 7.3 ± 1.4 hours in the first month to 8.0 ± 1.3 hours in the third month ($p=0.040$) (see Table 2).

Table 2 here

On the average nighttime waking frequency (20:00-08:00) was 3.5 times during the first three months, while daytime waking frequency was 4.5 times and total waking frequency was 8 times daily.

Most of the three-day old infants (70%) fell asleep in not more than 15 minutes, this duration increased in one-month old infants (58%) and it decreased again in the following months. While the decrease in the falling asleep duration in the second or third months was found to be statistically significant ($p=.007$, $p=.002$, respectively), the increase in the first month was found to be insignificant.

The number of depressed or anxious mothers was found to decrease towards the 3rd month (see Table 3).

Table 3 here

Day time sleep duration of the infants born to depressive mothers was shorter in the first month ($p=.02$). For the other months, depression was found to have no effects on infants' day time sleep duration ($p>.05$) (see Table 4) In addition, night waking frequency was higher in infants whose mothers were in depression in the second month ($p=.008$). Same relation was not found in the other months. There was no association between mother's depression and the infants' night time falling asleep duration ($p>.05$).

Table 4 here

Although there was a significant relationship between the mothers' anxiety and the mothers' comments on the infants' sleep quality in the second month ($p=.01$), no significant relationship was found on the third day and in the first and third months ($p>.05$) (see table 5). No significant relationship was found between mother's anxiety and infants' total night time and day time sleep duration ($p>.05$).

Table 5 here

Discussion

In the present study, sleep habits during the first three months of life of 70 infants were examined. Mothers' reports of poor sleep quality in infants' decreases towards the third month. There is a significant relation between the mothers' anxiety and the infants' sleep quality in the second month in contrast to the first and the third month ($p<.05$).

Anxiety and depression are frequent among pregnant and postpartum women (3,4). A meta-analysis that includes 59 studies and 12000 women reported the rate of postpartum depression during the first two months after birth as 13% (5). In Turkey, the rate of postpartum depression varies between 9% and 30% according to various studies (6,7,8,9,10). In our study, while the rate of depression was found as 25.7% on the first days after birth, this rate decreased to 8.6% in the following months. The rate of anxiety was found 11.1% in a study conducted by Reck et al. with 1024 women in Germany during the first three months in postpartum period (11). In our study, the rate of anxiety was found to be 25.7% in the first three postpartum months. The high rate of anxiety on the first days decreased when the mothers got used to the presence and demands of baby.

In general, it is accepted that there is a relationship between postnatal depression of the mother and infant's sleep problem. It may be speculated that the mothers of the infants who have sleep problems may have depression or anxiety or the mothers who have anxiety may characterize infants' sleep as more problematic. Some studies have shown that the frequency of depression

or anxiety decreased by increasing sleep duration of the infants thanks to the parent-based sleep education (12,13,14).

Although infants' total sleep duration tended to decrease with age in the first three months, it was 14 hours on the average and night time sleep was longer than day time sleep in general. This finding is consistent with the results of other studies. In a meta-analysis of the studies that were conducted in various countries, Galland et al. reported it as 14.6 and 13.6 hours in 2 months old and 3 months old infants, respectively (15). Sadeh et al. conducted an interview with 5006 parents in Canada and reported that the total daily sleep duration decreased with age and night time sleep got longer (16).

Waking frequencies of the infants were 8 times a day- 3.5 times at night and 4.5 times during day time on average. Mickelson et al. reported that the rate of 6 hours long night wakeless sleep was 35% in the infants younger than 3 months of age and it increased with age (17). Sette et al. reported that 56.4% of 3 month old infants wake up two or three times, and 8.8% of infants wake up three or more times at night, also 34.8% of infant don't wake up at night (18). The study conducted by Sadeh et al. showed that average night time waking frequency was 1.89 in 0-2 month-old infants (16).

In our study, waking frequency of the infants was rather high. A study that compared different societies asserted that wakeless sleep was less common when the infants sleep in their parents' room compared to sleeping in separate rooms (19). Araz et al. conducted a study in the southeastern Turkey and showed that 56% of the 0-6 month old infants sleep in the same room with their parents and 68.6% of them wake up frequently at night (20). The rate of mothers who perceived a sleep problem in their infants dropped from 40% in the first month to 17% in the third month. The numbers of bad nights decreased gradually. This progress in sleep may be attributed to the mothers' gaining experience and the infants' growing up.

Conclusion

In the present study, infant sleep was examined during the first three months of life. The sample size was relatively small. For these reasons, some tendencies about infants' sleep are striking, but their statistical significance do not exist. Further studies are needed including a large sample size and a longer follow up in Turkey.

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Tables

Tablo 1. Demographics Features of the Subjects.

	n	%
Gender		
Boys	37	52.9
Girls	33	47.1
Number of siblings		
None	32	45.7
1	27	38.6
2 and above	11	15.7
Delivery type		
Cesarean section	50	71.4
Spontaneous vaginal route	20	28.6
Maternal age (years)		
20-30	33	47.1
31 and over	37	52.9
Maternal education status		
Primary school	12	17.1
High school	30	42.9
University	28	40.0
Mothers' profession		
Available	32	45.7
Unavailable	38	54.3
Fathers' age (years)		
24-30	19	27.1

31-40	38	54.3
41 and over	13	18.6
Fathers' education status		
Primary school	7	10.0
High school	25	35.7
University	38	54.3

Table 2. Sleep Duration of the Infants During the First Three Months of Life.

Infant age	Total sleep duration		Day-time sleep		Night time sleep	
	Mean (SD) hours/day	(SD)	Mean (SD) hours/day	(SD)	Mean (SD) hours/day	(SD)
1st. month	14.0 (2.4)		6.8 (1.3)		7.3 (1.4)	
2nd. month	14.0 (2.4)		6.3 (1.3)		7.9 (1.4)	
3rd. month	13.7 (2.0)		6.0 (1.5)		8.0 (1.3)	
p value	.905		.047		.040	

Table 3. Anxiety and Depression in Mothers of the Infants in the First Three Months of Life.

Age	Depression (+) (≥ 12 points)		Depression (-) (< 12 points)	
	n	%	n	%
3rd. day	18	25.7	52	74.3
1st. month	9	12.9	61	87.1
2nd. month	6	8.6	64	91.4
3rd. month	6	8.6	64	91.4
	Anxiety (+) (≥ 8 points)		Anxiety (-) (< 8 points)	
	n	%	n	%
3rd. day	34	48.6	36	51.4
1st. month	17	24.3	53	75.7
2nd. month	12	17.1	58	82.9
3rd. month	9	12.9	61	87.1

Table 4. Sleep Duration of Infants in Relation to Depression and Anxiety of Mothers.

Age	Depression (+)			Depression (-)		
	Total sleep	Day-time	Night-time	Total sleep	Day-time	Night-time
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
1st. month	13.6 (2.2)	6.0 (1.3)	7.0 (1.9)	14.3 (2.0)	7.0 (1.2)	7.2 (1.2)
2nd. month	14.3 (2.6)	6.7 (2.0)	7.6 (1.2)	14.0 (2.0)	6.2 (1.4)	6.2 (1.4)
3rd. month	13.9 (1.8)	6.5 (1.2)	7.3 (1.6)	13.7 (2.0)	5.9 (1.5)	5.9 (1.5)
	Anxiety (+)			Anxiety (-)		
1st. month	13.7 (2.1)	6.7 (1.2)	7.0 (1.3)	14.4 (2.0)	6.8 (1.3)	7.3 (1.5)
2nd. month	14.3 (2.2)	6.3 (1.7)	8.0 (1.7)	14.0 (2.0)	6.2 (1.4)	7.7 (1.9)
3rd. month	13.8 (2.1)	6.2 (1.2)	7.6 (1.0)	13.7 (2.0)	5.9 (1.2)	7.8 (1.4)

Table 5. The Mother's Subjective Evaluation of Infants' Sleep Quality in Relation with Presence of Anxiety.

Anxiety	Good sleep quality		Poor sleep quality		Statistics p value
	n	%	n	%	
First day					
Present	20	55.6	16	44.4	.110
Absent	26	76.5	8	23.5	
Total	46	65.7	24	34.3	
First month					
Present	28	52.8	25	47.2	.570
Absent	7	41.2	10	58.8	
Total	35	50.0	35	50.0	
Second month					
Present	35	60.3	23	39.7	.010
Absent	2	16.7	10	83.3	
Total	37	52.9	33	47.1	
Third month					
Present	36	59.0	25	41	.500
Absent	4	44.4	5	55.6	
Total	40	57.1	30	42.9	