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Research Article

Sleep Problems and Affecting Factors of 6-12 Months Infants in Istanbul / Turkey

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Keywords
• Sleep
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Abstract

Introduction: Family's cultural and traditional practices have a great importance in ensuring the sleep pattern of the infant. This descriptive and cross-sectional study was conducted in order to evaluate the sleep pattern of 6-12 months infants and determine the familial factors that may affect sleep pattern's development.

Materials and methods: The study was conducted between January-April 2013 with 98 mother-infant pairs who agreed to participate in the study in a family health centre in Istanbul. Infants included in the study are full-term born and healthy infants with a birth weight between 2500-3500 g. The data were obtained by using the questionnaire developed by the researchers in line with the literature and improved according to expert opinions.

Results & discussion: The average age of infants was 8.09 ± 2.96 months. When mothers were asked if they had difficulties in putting their infants to sleep, 56.1% (n: 55) specified they occasionally have problems. It was found that 62, 2% of mothers singing lullabies, 13,3% were reading books, 56,1% were shaking their infants on their legs and 11.2% on a sheet or 28.6% in the crib for putting their infants to sleep. Mothers explained that left their infants alone on the bed (22, 4%) and breastfeeding (52%) for sleeping.

Conclusion: Providing mothers with trainings regarding the sleep patterns of infants at FHC can be recommended as an effective nursing practice in developing infants 'sleep patterns.

ABBREVIATIONS

FHC: Family Health Center; SIDS: Sudden Infant Death Syndrome

INTRODUCTION

Sleep is a neuro-physiological state programmed by the brain that helps the individual rest. Sleep, which is a physiological need, is a main life activity such as eating and excretion [1-3]. Infants' sleep patterns show individualistic differences [4,5]. Infants spend a great part of their lives sleeping. They sleep for an average of 10-16 hours a day in the first three months and 8-10 hours of this period are the night sleep. Infants' sleeping development has been reported to be increasing in parallel with growing up, with the decreasing daytime sleep and increasing interrupted night sleep [1,2]. Sleep problems of infants include difficulty in falling asleep, resisting to sleep, night-time awakenings, want to sleep with parents, drowsing during the day, and uneasy crying [6]. Insufficient sleep may lead infants to behavioural problems, loss of appetite, uneasiness, unmotivated crying, and negatively-affected education success in the upcoming years due to the affected mental activities [4,7]. Family members' lifestyles and sleep patterns affect the development of the sleep pattern [4,7,8]. Behaviours that mothers carry out to put their infants to sleep such as shaking the infant, taking the infant on their lap and sleeping together affect the development of the infant's sleep habit. In addition, cultural and traditional practices of other family members are also among the factors that affect the infant's sleep pattern development. Many sleep problems among infants arise from the sleep preparation behaviours of the mother and family [6,9,10]. The purpose of this study designed in accordance with all this information is to evaluate the sleeping mode of 6-12 months infants and determine the familial factors that may affect the sleep pattern development.

MATERIALS AND METHODS

This is a descriptive and cross-sectional study. The study was conducted in a FHC in Istanbul between January and April

2013. The population of the study consisted of the mothers and infants in a FHC. The sample group consisted of a total of 98 infants who were full term born with birth weights of 2500-3500 g, were found to be healthy according to the examination conducted by the family doctors, did not have any serious illness, and their mothers who came to the FHC between the determined dates, were voluntary to participate in the study. Data collection form (102-questions) prepared by the researchers and edited according to expert opinions was used to collect the data of the study. Data were collected through face-to-face interviews made with mothers. The obtained results were assessed at the confidence interval of 95% and the significance was accepted as $p<0.05$.

RESULTS AND DISCUSSION

Results

Descriptive characteristics of the family were evaluated in the study. According to results, 39% (n: 38) of 98 mothers who participated in the study were university graduates, 46 %(n: 45) were high school graduates, and 41% were employed (n: 40). Mothers expressed that 75% (n: 73) of fathers were civil servants and 13% (n: 13) were employed in private sector and 20% (n: 20) of mothers specified their revenue to be higher than their expenses, 56% (n: 55) specified their revenue to be equal to their expenses and 88% stated that they lived with only their spouses and children.

Table (1) illustrates distribution of descriptive characteristics of infants. According to results 49% of infants are girls, 59.2% were born through caesarean section and 45.9% had one sibling. The average age of infants was 8.09 ± 2.96 months. 64.3% of mothers stated they fed their infants also with supplementary food in addition to breast milk. 77.5% of infants were born in daytime.

When mothers were asked if they had difficulties in putting their infants to sleep, 56.1% specified they occasionally had problems, and 17.3% stated they very often had problems. While, 88.8% of mothers stayed with their infants as they fall asleep and 44.9% (n: 44) always slept at the same time with their infants. While 38.8% of mothers put their infants to sleep on their back, 53% put their infants to sleep on their side. 54.1% of infants slept in their own cribs in their parents' bedroom; whereas 35.7% slept in their cribs in their own rooms. When mothers were asked when the sleep pattern was regularized, 50% of mothers specified that their infants' sleep pattern was regular before the 6th month. The rate of infants whose sleep patterns were still not regular was 27.6 % (Table 2).

When the problems observed on infants during sleep by mothers were evaluated, 5.1% of infants had shortness of breath, 21.4% with teeth grinding/ clenching, 28.6% with snoring, 36.7% with uneasiness, 46.9% with jumping in fear, 51% with sweating and continuous awakening at night, and 68.3% with resisting to going to sleep (Figure 1).

When mothers' behaviours for preparing their infants were compared with infants have or don't have sleep problems; sleep problems were found to be significantly higher in statistical terms among the infants who were shaken on a sheet, were read books to and given pacifiers with honey or sugar ($p\leq0.05$); whereas, sleep problems were significantly lower among those who were left alone to sleep without any interventions compared to those who were not left alone ($p<0.000$) (Table 3).

When infants' sleep durations and their birth times were compared; night-time sleep durations of those who were born in daytime were 9.24 ± 2.01 hours, and it was 8.18 ± 1.69 hours

Table 1: Distribution of Descriptive Characteristics of Infants (N=98).

Characteristics	n	%
Gender		
Girl	48	49.0
Boy	50	51.0
Number of sibling		
No sibling	45	45.9
One sibling	45	45.9
Two sibling	8	8.2
Delivery method		
Vaginal delivery	40	40.8
Caesarean	58	59.2
Time of birth		
Daytime(06:01-18:00)	76	77.5
Nigth time (18:01-06:00)	22	23.5
Nutrition type		
Exclusive breastfeeding	20	20.4
Breast milk + supp. food	63	64.3
Supp. food	15	15.3

Table 2: Distribution of sleep-pattern characteristics of infants (N=98).

Sleep-pattern characteristics	n	%
Difficulties situation in put their infants to sleep		
Very often	17	17.3
Occasionally	55	56.1
Never	26	26.6
Staying with infants as they fall asleep		
Yes	87	88.8
No	11	11.2
The regulation status of sleep time		
Always sleep at the same time	44	44.9
Sometimes irregularities	28	28.6
Sleeping when it comes	26	26.5
Laying position		
Back	38	38.8
Side	52	53.0
Down	8	8.2
Sleeping place		
Sleeping in their own cribs in their parents' bedroom	53	54.1
Sleeping in their cribs in their own rooms	35	35.7
Sleeping with parent in the same bed	10	10.2
Starting time to sleep pattern		
Before 6 months of age	49	50,0
After 6 months of age	22	22.4
Not regular	27	27.6

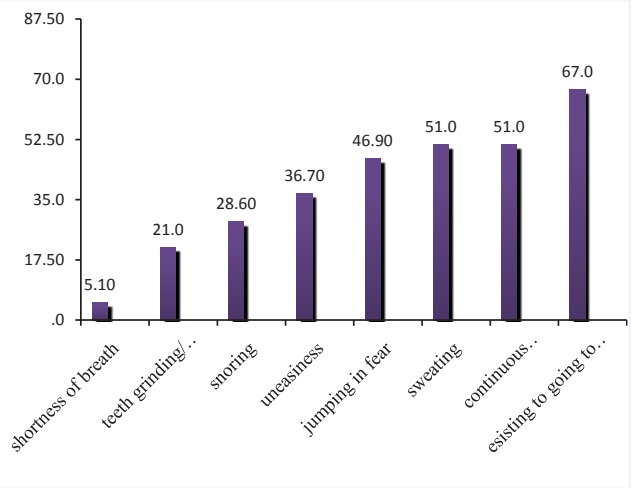

Figure 1 Problems observed by mothers in their infants during sleep (N=98).

among infants who were born at night-time. Infants who were born in daytime were found to be sleeping longer (1.06 hours) than the infants who were born at night-time in a statistically significant level ($p<0.05$) (Table 4).

When the correlation between sleeping hours and sleeping durations of infants was compared; the night sleep period of the infants who went to sleep at 11.00 p.m. and before was 6.31 ± 3.41 hours, whereas the night sleep period of the infants who went to sleep after 11.00 p.m was 3.81 ± 2.70 hours. While total night sleep duration was 9.68 ± 1.72 hours among the infants who slept at 11.00 p.m. and earlier, it was 7.93 ± 2.25 hours among those who slept after 11.00 p.m. The night sleep periods and total sleep durations of infants who slept at 11.00 p.m. and earlier were longer than the infants who slept after 11.00 p.m. ($p>0.05$) in a statistically significant manner. When infants' number of night awakenings and their sleeping hours were compared, infants who slept at 11.00 p.m. and earlier were waking 2.06 ± 1.29 times while those who slept after 11.00 p.m. were waking 2.74 ± 1.79 times. No statistically significant difference was found between infants' number of night awakenings and sleeping hours ($p>0.05$) (Table 5).

Discussion

Sleep is a normal cyclic physiological state in which consciousness, wakefulness and volitional acts disappear and the individual can wake up with a sensory or another type of stimulus [11,12]. Sleep plays an important role in the development of brain and body. Therefore, sleep pattern is effective on a development, emotional health and immune function [2,13,14]. Infants and children spend a great part of their time sleeping [2,13].

Infants' sleep patterns are different from each other. While some infants tend to sleep more at night, others have longer daytime sleep durations. Infants sleep averagely 10-16 hours a day for the first three months. Infants, who have a night-time

Table 3: Comparison of mothers' behaviours for preparing their infants to sleep according to Infants have/don't have sleep problems (N=98).

Mothers' behaviours for preparing their infants to sleep	Infants have sleep problem n	%	Infants dont have sleep problem n	%	Total n	%	X^2	p
Shaking on a sheet								
Yes	8	8.2	3	3.1	11	11.2	**3.38**	**.05**
No	38	38.7	49	50.0	87	88.8		
Reading books								
Yes	3	3.1	10	10.2	13	13.3	**3.62**	**.05**
No	43	43.8	42	42.9	85	86.7		
Giving pacifiers with honey or sugar								
Yes	4	4.1	-	-	4	4.1	**6.24**	**.01**
No	42	42.8	52	53.1	94	95.9		
Leaving alone								
Yes	2	2.1	20	20.4	22	22.4	**18.63**	**.000**
No	44	44.8	32	32.7	76	77.6		
Singing lullaby								
Yes	33	33.6	28	28.6	61	62.2	3.32	.06
No	13	13.3	24	24.5	37	37.8		
Shaking on the leg								
Yes	28	28.5	27	27.6	55	56.1	.79	.37
No	18	18.4	25	25.5	43	43.9		
Shaking in the crib								
Yes	16	16.3	12	12.2	28	28.6	1.63	.20
No	30	30.6	40	40.9	70	71.4		
Breastfeeding								
Yes	26	26.5	25	25.5	51	52.0	.69	.40
No	20	20.3	27	27.6	47	48.0		

sleep duration of 8-10 hours in this period, have decreasing sleep needs as they grow older. Children who are younger than one year of age wake up three times at night on average [1,2]. Similarly, in our study, where the average age of infants was 8.09 ± 2.96 months, the total night-time sleep duration of infants was 8.90 ± 2.09 hours and number of night awakenings was 2.36 ± 1.52 (Table 5).

It is important to put children to sleep at the same hour every night in terms of creating a sleep pattern for the infant/child and ensure sleep hygiene. In a study conducted by Taşdemir & Temel (2014) among infants aged between 0-36 months, 18.7% of mothers specified their infants fell asleep very easily, 17.4% said they fell asleep difficultly, and 6.0% said they fell asleep very difficultly [10]. (Table 2) illustrates that 17.3% of mothers in our study specified that they very often had difficulties in putting their infants to sleep; whereas, 26.6% stated they never experienced any difficulties in putting their infants to sleep. When compared to the study of Taşdemir & Temel (2014), the results of two studies are almost similar.

In the study conducted by Taşdemir & Temel (2014), in which the frequency of infants' behaviour of going to sleep at the same hour was analysed; 6.8% never went to sleep at the same hour, 23.6% went to sleep at the same hour 5-6 nights in a week and 23.6% went to sleep at the same hour every night [10]. In this study, almost half of the infants (44.9%) slept at the same hour; whereas, 26.5% fell asleep irregularly when they felt sleepy. The difference is thought to be due to the fact that the age range of the infants included in the sample group in the study of Taşdemir & Temel (2014) was wider than the age range of the infants in our study. Irregularities in sleep times were thought to be associated with the negative effects on the sleep pattern of infants created by environmental stimuli as infants get older.

Sudden Infant Death Syndrome (SIDS) is a state which results in the unexpected death of infants in the period of infancy, especially between 2nd - 4th months, and whose cause is not exactly known [15,16]. Putting the infant to sleep facedown or on its side and sharing the bed with parents are considered as risk factors for SIDS [15-18]. In terms of sleep health and safety, facedown sleeping position is not preferred for infants for occurrence of SIDS. American Academy of Paediatrics recommends not putting infants to sleep in a facedown position [15,16,18-20]. In a study conducted by Inbar et al., (2005), 31.1% of infants under the age of 12 months were put to sleep on their backs and 30.9% were put to sleep on their sides [21]. In the study of Çelik et al., (2010), which was conducted among infants younger than six months, 68.6% of infants were put to sleep on their sides; whereas, 24.5% were put to sleep on their backs [16]. In the study conducted by Ustabaş and Gözen (2011) with 198 newborns, 65.7% of infants slept on their sides and 26.9% on their backs [3]. In a study of Aitken et al., (2016), which was conducted among grandmother and mothers' behaviours about sleep position of infants younger than six months? Aitken et al., (2016) expressed that 60% of grandmothers and 62% of mothers put the infants on their back [17]. In our study, more than half of the infants were put to sleep on their sides, 39% were put to sleep on their backs, and 8.2% were put to sleep in facedown positions (Table 2). The rate of putting the infant to sleep on its back, which is considered safe in terms of SIDS, has been found to be low in some studies [3,16,21] and the habit of putting the infant to sleep in facedown position has still continued.

While sleeping with parents increases the risk of SIDS, sleeping in the same room with parents reduces this risk compared to sleeping in different rooms [15,16]. In the study of Ostfeld et al., (2006), the frequency of infants sleeping in the same bed with parents was found to be 39% [22]. In the study of Çelik et al., (2010), 92.8% of infants were reported to sleep in the same room with mother and 8.7% in the same bed with mother [16]. In the study of Smith et al., (2016), the frequency of infants sleeping in the same room without bed sharing was found to be %65,5 [23]. In our study, more than half of the infants (54.1%) were found to sleep in different beds in the same room with mother and 10.2% to sleep in the same bed with mother (Table 2). Regarding such results, our study is similar to the study of Çelik et al. (2010), but it has higher results than the study of Ostfeld et al., (2006). This situation is thought to be associated with the fact that our study was conducted in the same country as the study of Çelik et al., (2010), whereas, the study of Ostfeld et al., (2006) was conducted in a different country and there were cultural factors.

Approximately 20-30% of infants frequently experience sleeping problems in the first few years of their lives [24]. In the study of Evliyaoğlu (2007), 25-50% of infants were reported to have frequent awakening problem at night [2]. Similarly in our study, 51% of infants were found to wake up continuously at night (Figure 1). Results of both studies are similar.

In the study of Bölükbaş et al., (2009), mothers were mostly reported to use the methods of shaking the infant on the legs (67%), shaking in the infant in crib (52%), singing lullabies (32%), and breastfeeding (24%) in order to put their infants to sleep [25]. In the study of Özyazıcıoğlu & Polat (2005), 43.9% mothers used pacifiers with honey or sugar to put their children to sleep [9]. Similarly in our study, mothers used traditional practices; they sang lullabies to infants (62.2%), used pacifiers with honey or sugar (4.1%), read books (13.3%), shook the infant on their legs (56.1%), on a sheet (11.2%) or in the crib (28.6%), put them to sleep while breastfeeding (52%) and left them alone to fall asleep on bed (22.4%) (Table 3). When compared to the study of Bölükbaş et al., (2009), our study has similar rates in terms of shaking the infant on legs, as it is a very common tradition in Turkey to shake the infant on the legs to put them to sleep. In the study of Bölükbaş et al., (2009), the rate of shaking the infant in the crib was found to be almost twice of the results of our study, and this situation was thought to be caused by the regional differences and traditional practices in Turkey. The fact that the rates of singing lullabies and breast feeding were considerably higher in our study than the study of Bölükbaş et al., (2009). The rates of breastfeeding and singing lullabies to put the infant to sleep were thought to be higher since Istanbul is a bigger city and mothers have more opportunities to reach information related to healthy behaviours.

It has been reported that the circadian rhythm starts to form after the first days after birth, an infant's circadian rhythm becomes regular approximately in the 6th month and the duration of their night-time sleep becomes longer [26]. Post-natal visits are among important traditions in Turkey as families are attached to

Table 4: Comparison of Sleep Durations and Their Birth Times of Infants (N=98).

Sleep durations (hours)	Birth times		Statistics	
	Day time (06.01-18.00)	Night time (18.01-06.00)		
	Mean ± Std.	Mean ± Std.	F	p
Day-time sleep durations	3,05 ± 1,44	3,67 ± 2,15	1,38	.025
Night-time sleep durations	9,24 ± 2,01	8,18 ± 1,69	**2,89**	**.04**

Table 5: The Correlation between Sleeping Hours and Sleep Durations of Infants (N=98).

Sleeping /awakening charactheristic	Sleeping time				
	11.00 p.m. and before	11.00 p.m. and after	Total	Statistics	
	Mean ± Std.	Mean ± Std.	Mean ± Std.	Z	p
The night sleep period (hours)	6,31 ± 3,41	3,81 ± 2,70	5.31 ± 3.36	**5.19**	**.00**
Number of night awakenings	2.06 ± 1,29	2,74 ± 1,79	2.36 ± 1.52	2.04	.10
Total night sleep duration (hour)	9,68 ± 1,72	7,93 ± 2,25	8.90 ± 2.09	**6.29**	**.00**

each other and friends or neighbours have close relationships. As visits are mostly paid in daytime, it is possible for infants who were born in daytime to sleep in a more peaceful environment at night. Additionally, as the newborn baby is expected with excitement, family visits are paid at night hours for infants born at night-time, therefore the infant receives more stimuli at night hours. According to the result of the study, longer night-time sleep hours of infants born in daytime compared to infants born at night-time are thought to be arising from these stimuli as they can be effective on the development of circadian rhythm after birth (Table 4).

In his study, Sadeh (2004) reported that the frequency of awakening at night among 0-30 month old infants was 3.21 ± 2.47 times. In his study, Sadeh (2004) reported that the frequency of awakening at night among the infants between the ages of 0-6 months was 2,69 ± 1,75 times and night sleep durations was 8.40 ± 1.73 hours; whereas, it was 3.25 ± 1.93 tims and 8.89 ± 1.75 hours respectively among infants between the ages of 7-12 months [27]. In parallel with the study of Sadeh (2004), the frequency of night-time awakenings in our study was under three times (2,36 ± 1,52) and infants slept for a long time (8.90 ± 2.09). In addition, infants who sleept early (9, 68 ± 1,72) were found to sleep longer than the infants who sleept late (7,93 ± 2,25) in a significantly high level (Table 5).

Infants who were put to sleep early were thought to be the infants of mothers who carry out pre-sleep preparation behaviours more regularly. Similarly, as the study of Özyazıcıoğlu & Polat (2005) was conducted in the eastern part of Turkey, the rate of using pacifiers dipped in honey or sugar as traditional practice was higher than results of our study. Since the educational levels of women in the western part of Turkey are higher, the rate of using traditional practices was thought to be lower. When mothers' behaviours to put their infants to sleep and the infants' states of experiencing sleep problems are compared; the practices of shaking the infant on a sheet and using pacifiers dipped in sugar or honey were found to be causing significant sleep problems whereas no significant sleep problems were found among the infants of mothers who read books to their babies. No significantly high sleep problems were observed among the infants of mothers who put their infants alone on bed to fall asleep. It was thought that behaviours with less stimulating effects before sleep such as reading books or leaving the infant alone on bed were found to be effective in soothing the infant and traditional practices keeping the infant awake were found to be leading to more sleep problems.

CONCLUSION

Consequently, it was observed that pre-sleep preparation behaviours that soothe the infant such as reading books or leaving the infant alone on bed for falling asleep affected the infant's sleep pattern positively, and going to sleep early was effective in prolonging the sleep duration. It is thought that although families in Istanbul have more opportunities in terms of reaching the information about health promotion, they have still been performing behaviours such as shaking the baby on their legs or in the crib. Providing mothers with trainings regarding the sleep patterns of infants at FHC can be recommended as an effective nursing practice in developing infants' sleep patterns.

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