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Research Article

Sleep Problems and Effective Factors in Preschool Children

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ABSTRACT

Aim: This descriptive field study was carried out to determine the prevalence of sleep problems and affecting factors in preschool children.

Method: The universe of this descriptive study consisted of 5454 children studying in kindergartens affiliated to the Ministry of National Education in İzmir. The study sample consisted of 325 children aged 4-6 years attending preschool and their mothers/caregivers in three kindergartens in İzmir. Data were collected by interviewing the mothers by using the "Brief Infant Sleep Questionnaire Turkish Form." SPSS 16.0 package program was used to evaluate the data. The data were presented as numbers, percentages, and median, and chi-square statistical tests were used to analyze the data.

Results: By calculating the seven parameters (sleep level measurements) of the Baby/Child Sleep Problem Diagnosis Form, the prevalence of sleep problems in children was found to be 43.4%. There was no difference in the frequency of sleep problems according to age and sex of children ($p>0.05$). Sleep problems were most prevalent in children of mothers with high school degree and least prevalent in children of mothers with college and above educational status ($p<0.05$). No difference was found between the children who had their own room for sleeping and those who did not ($p>0.05$). Sleeping problems were most prevalent among children who slept in the room of their siblings, another person, or in their parents' bed ($p<0.05$).

Conclusion: Nurses should interview mothers in all health institutions and determine sleeping problems during the nursing assessment process and provide counseling and education to mothers.

Keywords: Child, preschool, sleep

INTRODUCTION

Sleep, which is a reversible state of unconsciousness, is a state of inactivity that allows the body to rest and is an active regeneration period that re-prepares the whole body for life (Şenol, Soyuer, Pekşen-Akça, & Argün, 2012). Sleep is the most important basic requirement, especially for the optimal completion of children's physical development. It is stated that sleep deprivation causes behavioral problems such as attention deficit in children (Koulouglioti, Cole, & Kitzman, 2008).

Research shows that about one quarter of children have sleep problems. Furthermore, it is known that insomnia or frequent disruption of sleep has direct effects on mood (Blundens et al., 2004; Fallone, Owens, & Deane 2002). Stein, Mendelsohn, Obermeyer, Amromin, & Benca (2001) studied 472 children between the ages of 4 and 12 and their families in order to determine sleep and behavioral problems in school-age children and found that 10.8% of children experienced sleep problems within the past 6 months. According to the study conducted by Çöl-Araz, Yılmaz, & Gökçay (2013) to determine the factors related to sleep habits and sleep problems in children between the ages of 2 and 5 years in the Southeastern Anatolia region, 50.5% of children woke up at night, 40% had difficulty falling asleep, and 51.6% resisted going to bed. In the study conducted by Gündüz & Uşak (2016) to demonstrate the awareness of pediatricians about sleep in children, of the 150 physicians, 65.3% had children and three quarters (76.5%) reported that their children had sleep problems, and 12.8% reported that they received adequate training about sleep. Akgün-Kostak, Kocaaslan, Bilsel, & Mutlu (2016) found

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that children slept for 9.7±1.4 hours at night and went to bed at 21.9±1.05 hours on weekdays and 22.24±1.06 hours on weekends; 42.3% of the children slept on their own, and 24.3% slept with their mother. Hebert, Langevin, Guidi, & Bernard-Bonnin (2017) investigated the relationship between sexual abuse and sleep problems in preschool children between the ages of 3 and 6 years and emphasized that sleep problems were more frequent in abused kindergarten victims.

Difficulty in falling asleep, not being eager to go to sleep, night waking, wanting to sleep with parents, and daytime sleepiness are reported in the context of sleeping problems in children (Sadeh, Mindell, & Rivera, 2011; Öner & Barut, 2009). Sadeh et al. (2011) compared the prevalence of sleep problems in children covering 17 countries in an intercultural study and reported that the prevalence of sleep problems in children ranged between 20% and 30% according to parents' reports. Difficulty falling asleep is seen in 10%-29%, and frequent night waking is seen in 15%-35% of children; the prevalence of these problems varies according to the childhood period (Karaçal, 2010; Tan, Marfo, & Dedrick, 2009). Inadequate sleep duration that may arise as a result of inappropriate sleep habits is reported to be an increasingly common public health problem in children (Karaçal, 2010).

Sleep is very important for healthy growth and development of children. Impaired or inadequate sleep causes morbidity and mortality in children and negatively affects the quality of life of the children and their family. Laying children to sleep 2-3 hours before the secretion of growth hormone enables the storage of the information learned during the day. Therefore, it is important that children be asleep by 08.30 pm (Necati & Gülçin, 2010). Sleep disorders are more easily diagnosed by nurses and physicians who care for children, but the diagnosis of sleep problems in children is often overlooked. In these cases, the treatments are also insufficient (Gündüz & Uşak, 2016).

In kindergarten children, difficulty in falling asleep and waking up at night, which are related to sleep onset behavior, are common. Settling in bed and falling asleep without the help of parents are learned behaviors in children. If a child is accustomed to being helped by his/her mother or to have a special practice (playing with a toy, listening to music) to fall asleep, the child will also ask for these environmental conditions during night wakes that occur in between sleep steps. In children with difficulty in falling asleep, parental intervention or customary special behavior is required during physiological awakenings. Behavioral treatment is the best treatment option for this problem (Karaçal, 2010).

Decrease in the duration of good sleep and the need for daytime sleep can affect children's physical and psychological status as well as family relationships and cause various behavioral problems in children. This situation also has negative consequences in the school life of children (Gozal & Gozal, 2007; Hemmingsson, Stenhammar, & Paulsson, 2008; Tietze, Blankenburg, Hechler, & Michel, 2012). For these reasons, early diagnosis and treatment of sleep problems in children are important for individual and family health.

Establishing the closest relationship to families in healthcare settings, nurses act as the key health care personnel in diagnosing children's sleep problem early and determining the solution of the problem. It is also important to conduct research in the field of nursing in which early diagnosis and resolution of sleep problems in children are conducted (Jocelyn, Moore, & Mindell, 2014). This study will reveal the importance and necessity of school health nursing in determining common health problems such as sleep problems in school-age children including kindergarten children in Turkey. In addition, this study will help nurses working in primary health care centers and pediatric health nurses working in hospitals to realize their responsibilities. This study will also contribute to the field of nursing literature.

This study was carried out to determine the prevalence of sleep problems and effective factors in preschool children.

Research Questions

1. What is the prevalence of sleep problems in preschool children?
2. Is there a relationship between the prevalence of sleep problems in preschool children and the factors affecting them?
3. Is there any difference between the perception of parents regarding sleep problems in their children and the results of the research?

METHOD

Study Design

This is a descriptive study.

Sample
The population of the study consisted of 5454 children studying in preschools (30) affiliated to the Ministry of National Education in the central districts of İzmir between May 20 and June 20, 2015. Three central districts and one kindergarten in each of these districts selected by simple random sampling were included in the study. The prevalence of sleep problems in children is reported to be 20%-30% in the literature (Liu et al., 2005; Sadeh et al., 2011). According to these data, the number of children required for the sample to be included in the study should be at least 319 at 95% confidence interval and±5% frequency limits (Jocelyn et al., 2014; Sümbüloğlu & Sümbüloğlu, 2009). The sample of this study consisted of 558 children aged 4-6 years and their mothers/caregivers. Furthermore, 325 mothers/caregivers who volunteered to participate in the study were included in the study.

Data Collection
The following tools were used to collect the research data.

Mother's Sociodemographic Data Collection Form: This form was created based on literature data on the subject (Sadeh, 2004; Sadeh, Mindell, Luedtke & Wiegand, 2009; Sadeh et al., 2011). There are 11 questions in the form to obtain information on the age, education, working status, acute or chronic illness of the mother/caregiver, family type, type of residence, type of heating in the house, and whether the child has his/her own room.

Brief Infant Sleep Questionnaire (BISQ): This form was developed by Sadeh in 2004, later expanded by Sadeh et al. (2009) and adapted to Turkish by Bayık-Temel and Taşdemir (2011). In the adaptation study, the invariance of the form over time was tested by pre- and post-test applications, and it was determined that there was a positive, moderate–strong (0.35-0.85), and significant (p<0.000) relationship between the mean values of the parameters in the form and the tool was shown to be reliable. This form does not have a scale structure and includes seven parameters and open- and closed-ended questions. Therefore, the reliability coefficient was not calculated.

In this form, the sleep status of the infant/children is evaluated with seven criteria such as sleep onset time, sleep onset latency, number of nights wakings, nocturnal wakefulness, nocturnal sleep duration, daytime sleep duration, and total sleep duration. Total sleep duration is calculated by adding nocturnal sleep duration and daytime sleep duration and then subtracting nocturnal wakefulness from this sum. If at least one of the following three conditions is observed, the infant/child is considered to have sleep problems: 1) the infant/child wakes up more than three times per night, 2) the infant/child stays awake at night for>1 hour, or 3) the total sleep duration of the infant/child is<9 hours (Sadeh, 2004). This form also includes questions on the date of birth of the child, sex, birth order, the place the child sleeps at, the place the child lies at, sleep position, how the child falls asleep, the rituals of the mother before putting the child to sleep, the behavior of the mother in the event of a night waking, and the mother's perception and evaluation of her child's night sleep.

After obtaining the necessary institutional permissions, the relevant kindergartens were visited, the school administrators were given detailed information about the study, and an appointment was made to collect the data. Forms were given after informing the mothers about the study and obtaining their written informed consent. The mothers were asked to evaluate their children's sleep and answer the related questions by considering the last week. The mothers took 20-30 minutes to complete the form.

Data Analysis
the Statistical Package for Social Sciences, version 16.0 software (SPSS Inc.; Chicago,IL, USA) was used to evaluate the data. The number, percentage, median, and standard deviation value of the data were calculated, and the correlations and consistency between sleep problem and variables thought to be effective on sleep problems were analyzed by chi-square statistical test and Cohen's kappa coefficient. p<0.05 was accepted as statistically significant.

Ethical Considerations
Written permission from the Provincial Directorate of National Education and approval from the Scientific Ethics Committee of Ege University Faculty of Nursing (dated June 27, 2015; No. 27344949/372) were obtained.

RESULTS

Sociodemographic Characteristics of the Children
Of the children aged 4-6 years included in this study,

35.7% were 4 years old, 29.2% were 5 years old, and 35.1% were 6 years old; 51.7% were girls, and 48.3% were boys. According to the birth order of the children, 19.7% were the first born, 3.1% were the middle child, 32.3% were the youngest, 1.2% were twins/triplets, and 43.7% were the single child. The mean age of the children was 4.99±0.84 years.

Sleep Level Measurements of Children and Prevalence of Sleep Problems

Table 1 shows the BISQ sleep level measurements. The median sleep onset time was 09.30 pm±0.78 hours, the median sleep latency was 2.00±0.79 hours, the frequency of night wakes was 1.00±1.50 times, and the children woke up 0-7 times at night. Nocturnal insomnia duration was found to be 5.00±13.16 minutes, and uninterrupted nocturnal sleep duration was found to be 7.00±1.75 hours. Daytime sleep duration of the children was 0.00±0.90 hours, and total sleep duration was calculated as 8.00±1.25 hours (Table 1).

Table 1. Distribution of sleep level measurements of children

BISQ sleep level measurements	Mean±SD	Min-Max
Sleep onset time (hours)	21.30±0.78	20.00-24:00
Sleep latency (hours)	2.00±0.79	0.08-1
Frequency of awakening at night	1.00±1.50	0-7
Nocturnal insomnia duration (minutes)	5.00±13.16	0-180
Nocturnal uninterrupted sleep duration (hours)	7.00±1.75	3-12
Daytime sleep duration (hours)	0.00±0.90	0-3
Total sleep duration (hours)	8.00±1.25	6-14

BISQ: Brief Infant Sleep Questionnaire; SD: Standard deviation; Min: Minimum; Max: Maximum

Table 2. Distribution of criteria for determining sleep problems in children

Criteria for determining sleep problems	n	%
1. Waking up more than three times a nighta	18	5.5
2. Waking up at night and remaining awake for more than an hour [a]	8	2.5
3. Total sleep duration<9 hours a	141	43.4
Prevalence of total sleep problems	151	43.4

[a]Percentages calculated for 325 statements for each criterion

It was found that 5.5% of children aged 4-6 years woke more than three times a night, 2.5% of them stayed awake during the night for >1 hour, and 43.4% had total sleep duration of <9 hours. The most common criterion was "total sleep duration of <9 hours," showing that 43.4% of children had sleep problems (Table 2).

Sociodemographic Factors Affecting Children's Sleep Problems

Table 3 shows the distribution of children's sleep problems by age and sex. There was no significant difference in terms of sleep problems in children by age group and sex (p>0.05) (Table 3).

Table 4 shows the distribution of children's sleep problems according to the age groups and the educational background of mothers.

When some environmental characteristics and children's sleep problems were examined in the context of sleep ecology, separate analyses revealed that there was no difference between whether the children had their own room or not and whether they had sleep problems or not (p>0.05). However, the prevalence of sleep problems differed according to the room where the child sleeps (his/her room, parents' room, or other rooms), the bed he/she sleeps on, type of heating in the house, and the sleeping position of the child. The prevalence of sleep prob-

Table 3. Distribution of children's sleep problems according to age and gender

Characteristics of children	Children with sleep problems		Children without sleep problems		Total n=325		Significance test
	n	%	n	%	n	%	X^2 p
Age group							
4 years	59	49.4	57	50.6	116	100.0	X^2=2.48
5 years	43	45.3	52	54.7	95	100.0	p>0.05
6 years	49	43.0	65	57.0	114	100.0	
Gender							
Female	80	47.6	88	52.4	168	100.0	X^2=0.37
Male	71	45.2	86	54.8	157	100.0	p>0.05

Table 4. Distribution of children's sleep problem according to the age and educational status of mothers (n=325)

	With sleep problems		Without sleep problems		Total		Significance test
Characteristics of mothers	**n**	**%**	**n**	**%**	**n**	**%**	**X^2 p**
Age group (years)							X^2=120.08
20-29	31	43.4	39	56.5	70	100.0	p<0.05
30-39	106	53.2	95	46.7	201	100.0	X^2=9.84
≥40	14	25.9	40	74	54	100.0	p<0.05
Education							
Primary–middle School	24	50	24	50	48	100.0	X^2=51.73
							p<0.05
High school	74	56.9	56	43.1	130	100.0	X^2=2.46
College/university and above	71	48.2	76	51.8	147	100.0	p>0.05

Table 5. Distribution of children with and without sleep problems according to certain environmental characteristics within the scope of sleep ecology

	With sleep problems		Without sleep problems		Total		Significance test
Sleep ecology features	**n**	**%**	**n**	**%**	**n**	**%**	**X^2 p**
Child's own room							
Yes	134	45.1	163	54.9	295	100.0	X^2=2.50
No	17	60.7	11	39.3	28	100.0	p>0.05
Room slept in							
Child's room	79	40.4	117	59.6	196	100.0	X^2=237.9
Parents' room	37	49.3	38	50.7	75	100.0	p<0.05
Room of siblings or other people at home	19	50	19	50	36	100.0	X^2=2.085
Other	7	43.8	9	56.2	16	100.0	p>0.05
Bed slept on							X^2=297.79
Child's bed	106	42.1	146	57.9	252	100.0	p<0.05
Parents' bed	30	48.3	32	51.7	62	100.0	X^2=0.830
Other	5	45.5	6	54.5	11	100.0	p>0.05
Mode of heating							
Stove	34	54	29	46	63	100.0	X^2=118.13
Electric stove	22	61.1	14	38.9	36	100.0	p<0.05
Central heating/natural gas	63	38.4	101	61.6	164	100.0	X^2=9.362
Other	32	51.6	30	48.4	62	100.0	p<0.05
Sleep position							
Prone	39	50	39	50	78	100.0	X^2=96.84
On the side	75	39.5	115	60.5	190	100.0	p<0.05
Supine	36	65.5	19	34.5	55	100.0	X^2=14.85
							p<0.05

lems was highest in children sleeping in siblings or other people's rooms, in parents' beds, and in supine position (p<0.05). Similarly, the prevalence of sleep problems was highest in households heated by electric stoves (p<0.05) (Table 5).

Comparison of Parents' Perceptions About Children's Sleep Problems and Research Results

Parents' perception of sleep problems in their children and the sleep problems identified in these children were compared. While 26.76% of the mothers said

Table 6. Comparison of sleep problem perception of parents and research findings

Research findings	Perception of mother for sleep problem in child		
Sleep problem	**No**	**Yes**	**Total (n)**
No	130	27	157
Yes	108	60	168
Total	238	87	325
	Perception of father for sleep problem in child		
Sleep problem	**No**	**Yes**	**Total (n)**
No	108	28	136
Yes	81	38	119
Total	189	66	255

that their children had sleep problems, it was determined that only 51.69% of these children actually had sleep problems. While 25.88% of the fathers stated that their children had sleep problems, it was determined that only 46.66% of these children actually had sleep problems. The concordance between the perceptions of mothers and the prevalence of sleep problems determined by this study was 19.0%. The concordance between the perceptions of fathers and the prevalence of sleep problems determined by this study was 20.0%. When the concordance between the perceptions of mothers and fathers was examined, it was found that there was a good level of concordance (Cohen's kappa coefficient: 0.69) (Table 6).

DISCUSSION

In this study conducted to investigate the prevalence of sleep problems and effective factors in preschool children, the BISQ sleep level measurements of children aged 4-6 years revealed that the mean sleep onset time was 09.30 pm±0.78, the mean sleep latency was 2.00±0.79 hours, and the frequency of night wakes was 1.00±1.50 times. Nocturnal insomnia duration was 5.00±13.16 minutes, uninterrupted nocturnal sleep duration was 7.00±1.75 hours, daytime sleep duration was 0.00±0.90 hours, and total sleep duration was 8.00±1.25 hours. These findings show that children go to sleep later than the recommended sleep time, sleep latency is prolonged, and total sleep duration is shorter than normal (Necati & Gülçin, 2010).

According to the results of a 2013 study conducted by Mindell, Sadeh, Kwon, and Goh on differences in sleep problems in 3- to 6-year-old preschool children (n=2590) of Asian origin (China, Hong Kong, India, Japan, Korea, Malaysia, Philippines, Singapore, Thailand) and Caucasian origin (Australia-New Zealand, Canada, United Kingdom, United States) in 13 countries, the prevalence of sleep problems was lowest in Korea with 15% and highest in China with 44%, the sleep onset time was 07.45 pm in Australia-New Zealand and 10.26 pm in India, the wake up time was earliest at 06.52 am in Thailand and latest at 07.58 am in Korea, the shortest total sleep duration was 8 hours 57 minutes in India, the longest total sleep duration was 10 hours 52 minutes in the United Kingdom, the average number of night wakes was 1, sleep latency was shortest in Japan with 14 minutes and longest in Philippines with 29 minutes, and nocturnal insomnia duration was shortest in Japan with 4 minutes and longest in Thailand with 15 minutes. According to the study conducted by Amintehran et al. (2013) with children aged 2-6 years, the sleep onset time was 10.54 pm, morning waking time was 08.45 am, and average sleep duration was 9.81 hours. It was reported that 28.9% of children had sleep problems before going to bed (Amintehran, Ghalehbaghi, Asghari, Jalilolghadr Ahmadvand, & Foroughi, 2013). When the literature is examined, no study has been found in Turkey to determine sleep problems in healthy preschool children on the basis of certain parameters. However, Akgün-Kostak et al. (2016) conducted a study. According to the findings of that study, children slept for 9.7±1.4 hours at night and went to bed at 09.09 pm±1.05 during the week and at 10.24 pm±1.06 at the weekend.

The sleep onset times found in the study of Akgün-Kostak et al. (2016) were consistent with the findings in our study. However, the total sleep duration calculated in our study was shorter than that found by Akgün-Kostak et al. (2016). This difference was attributed to the fact that Akgün-Kostak et al. (2016) calculated the total sleep duration only on the basis of the sleep onset time and waking up time, without considering other parameters such as sleep latency, night wakes, nocturnal insomnia duration, uninterrupted nocturnal sleep duration, and daytime sleep duration. When we compared our results with those of Mindell et al. (2013), it was observed that the sleep parameters obtained in our study were similar to those of Asian countries except for sleep latency. Compared with the study of Amintehran et al. (2013), it can be said that the sleep onset time of children in our study is earlier, but the average

sleep duration is shorter. Accordingly, it was found that the children in our study had difficulty falling asleep, and the total sleep duration was inadequate. It is known from the literature that growth hormone, which is very important in the development of children from early childhood to adulthood, is secreted within a few hours after falling asleep (Darendeliler, 2009).

In this study, it was determined that 43.4% of the children had sleep problems. Studies conducted in different countries have shown that the prevalence of sleep problems in children varies between 11% and 44% (Amintehran et al., 2013; Mindell et al., 2013; Nikki & McMahon, 2008; Sadeh et al., 2011; Tan et al., 2009). According to the study conducted by Çöl-Araz et al. (2013), 53% of the children woke up at night, 38% had difficulty falling asleep, and 39.3% resisted going to bed. Accordingly, it was thought that sleep problems were common in the study group.

Furthermore, we found that the prevalence of sleep problems did not change according to the age group and gender of the children ($p>0.05$). Similar to our study, Amintehran et al. (2013) conducted a study to determine the prevalence of sleep problems in preschool (2- to 6-year-old) and elementary school (7- to 12-year-old) children in Tehran and found that the gender of children did not affect sleep problems. In another study conducted by Javadi, Javadi, Kalantari, Jaliloghadr, & Mohamad (2014) to determine the prevalence of sleep problems in preschool (3- to 6-year-old) children in Iran, sleep problems were found to be similar between boys and girls of the same age.

In the present study, when the prevalence of sleep problems was examined on the basis of mothers' age group, it was determined that sleep problems were most prevalent in the children of mothers aged 30-34 years and least prevalent in the children of mothers older than 40 years ($p<0.05$). Sleep problems were most common among the children of high school graduate mothers ($p<0.05$). When the prevalence of sleep problems in children on the basis of mothers' age group and education was examined in the literature, no difference was found between the education level of the mothers and the age group. According to the study of Jafar et al. (2017), no difference was found between the sleep problems in children according the age group of mothers. In the study conducted by Taşdemir and Bayık (2015), no difference was found in sleep problems in 0- to 3-year-old children according to the education level of the mothers ($p>0.05$). Unlike other studies, a significant difference was found between the age group and education level of the mothers and the prevalence of sleep problems among their children in this study. This difference can be explained by the fact that 61% of the mothers in this study were between 30 and 39 years of age. At the same time, it can be said that as the level of education decreases, the prevalence of sleep problems increases.

Within the context of sleep ecology, it was found that 91.3% of the children had their own room, and there was no difference in sleep problems based on whether or not they had their own room. However, there was a difference in the prevalence of sleep problems according to the room where the child sleeps (his/her room, parents' room, and other rooms), the bed he/she sleeps in, the type of heating in the house, and sleep position of the child. The prevalence of sleep problems was highest in children who slept in sibling's or other people's rooms, in their parents' bed, and in the supine position. Likewise, the prevalence of sleep problems was highest in homes heated by electric stoves. In another study conducted in 2005 by Jenni, Fuhrer, Iglowstein, Molinari, & Largo, it was reported that 44% of Swiss children aged 2-7 years shared the bedroom with their parents at least once a week. It was reported that bed sharing and night waking were common in early childhood. In the study conducted by Tan, et al. (2009) on preschool children aged 4-6 years, 71.3% of children had their own room, and the prevalence of sleep problems was highest among children sleeping in their parents' beds and with siblings or other household members. In the study of Javadi et al. (2014) 87.0% of the children shared the same room with their parents, 61.8% had problems with "adaptation and adjustment time," and 76.1% had irregular morning waking hours. In the study of Taşdemir & Bayık (2015), it was found that sleep problems did not differ according to the heating in the room where the child sleeps ($p>0.05$). In a study conducted by Akgün-Kostak, et al. (2016) in 3- to 6-year-old children, it was found that 42.3% of the children were sleeping on their own and 24.3% were sleeping together with their mother. In another study, Walter, Weichard, Davey, Nixon, & Horna (2017) found that obstructive sleep apnea was more severe in 3- to 5-year-old preschool children sleeping in the supine position than in those

sleeping in other positions. It can be thought that the differences in these studies carried out on the subject may be due to the age group of children. It can be said that bed sharing with parents or other family members during nocturnal sleep is a widespread and common cultural factor that increases sleep problems in children.

The concordance between the perceptions of mothers and fathers about sleep problems and the sleep problems identified in children were found to be 19.0% for mothers and 20.0% for fathers. This very weak concordance suggests that both mothers and fathers, whether their children have a sleep problem or not, are not aware of this situation or ignore it and consider it a normal problem. The concordance between the perceptions of mothers and fathers was found to be good. This showed that their perceptions were similar. Fathers' perception of sleep problems in children is lower than mothers' perception.

CONCLUSION AND RECOMMENDATIONS

According to the results of this study conducted to examine the prevalence of sleep problems in preschool children and effective factors, the prevalence of sleep problems in 4- to 6-year-old children was 43.4% (n=141), and 26.7% of mothers (n=87) and 25.8% of fathers (n=66) stated that they thought their children had sleep problems. The prevalence of sleep problems was highest in children of high school graduate mothers.

The prevalence of sleep problems did not differ according to the age group and sex of the child and whether the child had his/her own room or not. The prevalence of sleep problems differed according to the room where the child slept, the bed in which the child slept, the type of heating in the house, and the position in which the child slept. Sleep problems were found to be more common in children sleeping with siblings or other household members, in their parents' bed, and in the supine position.

Nurses should identify children's sleep problems and effective sleep ecology factors by consulting with mothers in the diagnosis process of children in all health institutions and taking advantage of this form and provide counseling and training for sleep ecology to the mothers in need. Focusing the training and counseling programs on mothers with children in early childhood will be much more beneficial. Organizing training programs on sleep management in primary health care institutions, hospitals, through public spots, and on the Internet so that parents can recognize sleep problems in their children and express these problems will be beneficial for the health of the family as well as for the health of the child. Studies should be conducted to determine the prevalence of sleep problems in larger sample groups representing the population of children in this age group. Assessment of sleep problems by using the BISQ measurement tool should be carried out as a routine nursing service in the process of diagnosing healthy children in Family Health Centers and pediatric hospitals. This study can be repeated in a larger sample representing the Turkish society.

Inadequate sleep may cause a tendency for behavioral problems in children (Sheldon, 2001). In order for children to sleep adequately and to reduce sleep problems, the following recommendations are made:

- Families can establish some sleep time routines and limitations for their children. These routines should be established in an affectionate manner. It is recommended to start these routines 20-30 minutes before sleep.
- Children should be put to sleep at the same time every night (including holidays and weekends). Similarly, they should wake up in the morning at the same time.
- Excessive movement and foods containing caffeine (such as chocolate) should be avoided 1-2 hours before sleep.
- Inappropriate TV programs may also disrupt the sleep rhythm of children; therefore, this issue should be taken into consideration. Video games also have similar effects.
- After putting children to bed, one parent should stay with them for a while to calm them down (such as caressing, reading books, telling fairy tales). Children can also fall asleep with a favorite toy.
- The temperature and lighting of the bedroom (should not be bright) are important. It is appropriate to talk to families who sleep with their children about the safety of the bed and the environment.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Ege University Faculty of Nursing (Approval date: 27.07.2015, protocol no: 27344949/372).

Informed Consent: Written consent was obtained from individuals who wanted to participate in the study.

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