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Parents of children with developmental disability have insufficient knowledge about healthy sleep in children

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Abstract

Introduction: Since sleep disorders bring many physical and psychological problems in childhood, it is important for parents to have sufficient knowledge about healthy and problematic sleep to detect the sleep disorders from the earliest period. The aim of this study was to examine the knowledge about healthy sleep in children among parents of children with developmental disability.

Material and methods: The study included 146 children with developmental disabilities between the ages of 2-17 years old. Children's sleep durations were classified into two groups, according to the American Academy of Sleep Medicine recommendations (sleeps at recommended levels/sleeps below the recommended levels). The difference between these groups was analyzed with the Independent Samples T Test.

Results: The mean age of the children with developmental disabilities was 5.48 ± 2.42 years. In this study, only 2.74% of the parents of children with developmental disability answered more than 50% of the questions correctly. Parents of children who sleep at recommended levels had higher Parents' Sleep Knowledge Inventory (PSKI) total scores than parents of children who sleep below the recommended levels ($p = 0.047$).

Conclusions: It was determined that parents have insufficient knowledge about healthy sleep in children. This can explain the difference between children's sleep-related characteristics, and emphasize the need to increase the number of studies on parents' knowledge levels.

Keywords: children, sleep, developmental disabilities, parent

Introduction

Healthy sleep has an important place in the growth and development of children. Sleep disorders seen in children for different reasons can lead to psychological problems, metabolic complications, and a decrease in school success. For these reasons, early recognition of sleep problems in children and the utilization of the right approaches for these problems are essential [1–3]. Approximately 20 to 30% of children encounter sleep problems during childhood [4,5]. Sleep problems are seen at a higher rate between 24% and 86% in children with developmental disabilities [6], and the causes of sleep disorders include medical and neurological problems, use of medicine, and psychiatric disorders [7].

During the first 5 years of life, sleep organization undergoes many changes [5]. Different types of sleep problems can be seen in children, such as night seizures, nocturnal enuresis, the child's resistance to sleep at bedtime, sleep-related breathing problems, restless and periodic leg movements [5]. Sleep is sensitive to stress, and may cause changes in the emotional, physiological states of young children. Problematic night awakenings and difficulties at bedtime cause behavioral disorders in the preschool period [8]. However, it is known that sleep disorders in children are also associated with various psychiatric disorders such as metabolic complications, and attention deficit hyperactivity disorder [9].

Sleep problems in children are among the leading causes of anxiety in parents [5]. On the other hand, studies emphasize that sleep problems in children are inadequately screened, not reported enough by parents; and as a result, they are often not diagnosed [10,11]. Sleep problems may go undetected because of the poor knowledge about childhood sleep of many children's parents. However, little is known about parents' knowledge of their children's sleep [11,12]. It is important to investigate the sleep knowledge of parents of children with developmental problems, with appropriate and valid criteria.

Because the incidence of sleep problems in children with developmental disabilities is very high, it is important that health professionals working with children with developing problems question the characteristics of children's sleep. Information related to this subject is mainly obtained from parents and caregivers. The Parents' Sleep Knowledge Inventory (PSKI) is an inventory that evaluates the knowledge about the sleep of parents with typically developing children/children with developmental disabilities aged between 2 and 17 [12]. The aim of this study was to examine parents' knowledge about healthy sleep in children.

Material and methods

Participants

Parents of 146 children aged between 2 and 17 years with developmental disability (cerebral palsy, spinal dysraphism, obstetric brachial plexus injury, duchenne muscular dystrophy, autism spectrum disorder, syndromic diseases) were included in the study. Children whose families agreed to participate in the study constitute the sample. Children whose parents did not speak Turkish and were illiterate were excluded from the study. The study sample was formed from children with developmental disabilities living in XXX in Turkey. Children with developmental disability were reached through Special Education and Rehabilitation Centers. Data were collected between May 2022 and Jan 2023.

In the sociodemographic information form created for the study, the age, gender, if any, the information about the diagnoses made by the physician, and the sociodemographic information of the children's parents was collected.

Written informed consent forms were obtained from all individuals participating in the study. The research was approved by the clinical research ethics committee on 26.04.2022 (Protocol Number: 2022/107).

Parents' Sleep Knowledge Inventory

The inventory, which was developed by Schreck et al. in 2011 to evaluate parents' knowledge about childhood sleep, consists of 62 questions [12]. The inventory was created based on the current literature [13−15]. It evaluates sleep-related problems such as bedtime problems, excessive daytime sleepiness, waking up during the night, sleep duration and pattern, and snoring in order to provide detailed coverage of sleep problems. All questions are answered on the basis of a 4-point scale, with 0 (not true), 1 (somewhat or sometimes true), 2 (very true), and 3 (I don't know). The PSKI total score reflects participants' sleep knowledge for overall childhood. The total score is calculated by determining the number and percentage of correct answers. The PSKI's question themes examine the sleep characteristics related to the age of the child, developmentally normal sleep, and the sections related to sleep problems in detail. The subject of sleep characteristics related to the age of the child was created by determining the developmental norms suitable for the age group of the child from infancy to adolescence. The infancy category includes the period from birth to age 2 (25 questions), the early childhood category includes the period of age 2 to 6 (18 questions), and the middle childhood category includes the period of age 6 to 11 (19 questions), and the adolescence category includes the period of age 11 to 20 (13 questions). The developmentally normal sleep section consists of 36 questions and includes sleep duration and normal sleep habits appropriate for the child's age. The sleep problems section consists of 26 questions and includes common sleep problems (daytime sleepiness, apnea/snoring, body movements, awakenings, dreams/nightmares, etc.) [12]. The number of correct answers given represents the PSKI total scores of the participants. Maximum possible score can be obtained from PSKI subscales are 36 points for Normal Sleep, 16 for Hours, 8 for Naps, 26 for Problem Sleep, 4 for Apnea ⁄Snoring, 3 for Daytime Sleepiness, 1 for Body Movements, 20 for Waking, 11 for Settling, and 9 for Dreams/Nightmares.

Statistical analysis

The IBM Statistical Package for Social Sciences (SPSS) 23.0 (SPSS Inc., Chicago, IL, USA) program was used to analyze the data. As descriptive statistics, mean, median, standard deviation, minimum-maximum values for the measurement-based data, and percentages (%) for the categorical variables were specified. The interquartile range was also calculated. To determine the distribution of the PSKI subscale and Total Score data; the Kolmogorov Smirnov test was performed, and mean, median, skewness, and kurtosis coefficients were examined. The fact that the arithmetic mean and the median are equal or close, and the skewness and kurtosis coefficients are within the limits of ±1.5 indicates that the data comply with the normal distribution [16]. In our study, it was determined that all subscales and total score data, except the Body Movements subscale, came from a normal distribution.

One-Way Analysis of Variance (One-Way ANOVA) was applied to determine the difference between the PSKI total scores of participants according to the number of children they had. The Shefe Test, one of the Post Hoc tests, was used to determine the differentiation between the groups, since the variances showed homogeneous distribution. The Kruskal Wallis Test was used for the subscale of "Body Movements" because it did not conform to the normal distribution. The chi-square test was used to determine whether there was a statistically significant difference between the adequacy of sleep durations and the presence of sleep problems perceived by the family. The Independent Samples T-Test was applied to analyze the differentiation of PSKI total scores according to the sleep durations of the children. The statistical significance level was determined as $p < 0.05$.

Results

In this study, 146 children with developmental disabilities between the ages of 2 and 16, with a mean age of 5.48 ± 2.42, and their parents took part. For the majority of the participants, the inventory questions were answered by the mothers of the children (93.83%). 26.02% of the participants stated that their children had slight or serious sleep problems. The demographic characteristics of the children are presented in Table 1.

The percentages of responses to the PSKI are presented in Table 2. The green-marked parts in the table show the correct answers for each question. The percentages of answers other than the correct options were summed to calculate the total percentage of incorrect responses, and they are presented in the last column of the table. The questions with the most correct responses start with Question 31, which was answered correctly with a rate of 67.12%; Question 9 was answered correctly with a rate of 60.96 % and Question 58 was answered correctly with a rate of

Tab. 1. Descriptive variables of participants

Who Responded to the Inventory	Number (n)	Percentage (%)
Mother	137	93.83
Father	9	6.16
Educational Status of Respondents	Number (n)	Percentage (%)
Literate/Primary/Secondary School Graduate	75	51.36
High School Graduate	41	28.08
University Graduate	30	20.54
Number of Children in the Family	Number (n)	Percentage (%)
1	39	26.71
2	54	36.98
3 or more	53	36.30
Monthly Income Level (Turkish Liras)	Number (n)	Percentage (%)
5 Thousand Liras and Under	112	76.71
5 Thousand-7 Thousand Liras	19	13.01
7 Thousand Liras and Above	15	10.27
Perception of the Presence of Sleeping Problems (Parent Proxy)	Number (n)	Percentage (%)
No sleep problems	108	73.97
Slight or serious sleep problems	38	26.02

Tab. 2. Parents Sleep Knowledge Inventory (PSKI) questions, percentages of the responses for all questions, percentages of the correct/false responses

	0 (not true)	1 (somewhat or sometimes true)	2 (very true)	3 (don't know)	Cumulative Percent of False Responses
	%	%	%	%	%
1. Infants, aged 1–3 months old, should sleep 3–4 h after each waking period	5.48	29.45	50.68	14.38	49.31
2. One-year-olds typically sleep soundly throughout the night and take one nap during the day	12.33	32.19	50.00	50.00	50.00
3. Children, aged 6–12 years, do not typically take naps	20.55	33.56	36.30	9.59	63.70
4. Children, aged 6–12 years, are less likely to struggle or argue about going to bed than 3–5-year-olds	6.85	31.51	48.63	13.01	51.37
5. Nightmares are common among children aged 6–12 years	12.33	24.66	30.14	32.88	69.86
6. Adolescents, aged 13–18 years, require10.5–12.5 h of sleep within a 24-h period	10.96	32.19	34.25	22.60	89.04
7. It is normal for an infant (up to 24 months) to have difficulty sleeping alone versus sleeping with a parent	11.64	29.45	51.37	7.53	88.36
8. Newborn infants generally wake for 1–2 h before falling back to sleep	18.49	32.19	39.73	9.59	60.27
9. A newborn infant requires 16–20 h of sleep within a 24-h period	8.90	13.70	60.96	16.44	39.04
10. It is considered unusual for infants (up to 24 months) to wake periodically at night	24.66	30.14	25.34	19.86	75.34
11. Two-year-olds sleep approximately 18 h within a 24-h period	29.45	43.15	15.07	12.33	70.55
12. It is considered normal for children, aged 6–12 years, to get out of bed three times throughout the night	31.72	28.28	20.00	20.00	68.28
13. Five-year-olds take a short daytime nap and start to give up napping	8.22	19.86	57.53	14.38	80.14
14. Breastfeeding has been found to decrease an infant's ability to sleep soundly throughout the nigh	22.60	19.18	30.82	27.40	69.18
15. One-year-olds sleep approximately 13–16 h within a 24-h period	5.48	35.62	47.26	11.64	94.52
16. One-year-olds take 2–3 h of naps during the day	8.22	31.51	50.68	9.59	49.32
17. Children, aged 2–5 years, typically sleep soundly throughout the night	15.75	40.41	33.56	10.27	66.44
18. Toddlers, aged 2–3 years, sleep sounder when able to use a security object (i.e. a blanket. teddy bear. etc.)	7.53	32.19	46.58	13.70	53.42
19. Infants, aged 4–8 months, do not experience dreams	14.38	17.81	21.92	45.89	85.62
20. Children, aged 11–13 years, dream about activities they experienced throughout the day	7.53	22.60	45.21	24.66	54.79
21. Most children. aged 5–10 years. sleep soundly at night and are very alert during the day	8.90	27.40	52.74	10.96	47.26
22. Children, aged 3–5 years, normally nap during the day	19.18	40.41	27.40	13.01	59.59
23. The degree of attachment between a parent and their infant, aged up to 12 months, impacts an infant's sleep pattern	12.33	22.60	45.89	19.18	77.40
24. A newborn will usually take between four and six naps during the day	12.33	20.55	54.11	54.11	45.89

Tab. 2. Cont.

	0 (not true)	1 (somewhat or sometimes true)	2 (very true)	3 (don't know)	Cumulative Percent of False Responses
	%	%	%	%	%
25. Feeding an infant (up to 24 months) too often at night may cause them to wake more frequently during the night	10.96	27.40	49.32	12.33	50.68
26. Toddlers, aged 2–3 years, typically have trouble sleeping when they use a security object (i.e. a blanket. teddy bear. etc.) to go to sleep	23.29	36.99	23.97	15.75	76.71
27. Adolescents tend to report high rates of sleepless nights	14.38	23.29	38.36	23.97	85.62
28. A child sleeps more restlessly in cold weather than in hot weather	19.18	31.51	31.51	17.81	80.82
29. Three-year-olds report that their dreams consist of animal figures that look human	10.96	27.40	15.75	45.89	84.25
30. Children, aged 6–10 years, normally take at least 20 min to settle or go to sleep	6.85	26.03	43.15	23.97	56.85
31. A newborn infant should spend approximately 70% of every 24-h period asleep	6.85	14.38	67.12	11.64	32.88
32. Bottle-fed infants (up to 24 months) sleep less throughout the night than breastfed infant	14.38	30.14	24.66	30.82	85.62
33. It is considered normal for an infant (up to 24 months) to wake periodically throughout the night. as long as they can fall back to sleep independently	5.48	29.45	40.41	24.66	59.59
34. Adolescents spend about 12 h of a 24-h period asleep	10.27	35.62	30.82	23.29	89.73
35. It is more common for an infant aged 1–2 months to wake throughout the night than an infant aged 9–12 months	3.42	18.49	63.01	15.07	96.58
36. Children, aged 6–7 years, most often dream about ghosts and the supernatural	9.59	23.29	32.88	34.25	67.12
37. If children nap too often or for too long during the day. they may wake more frequently during the night	5.48	23.97	53.42	17.12	46.58
38. Children, aged 6–7 years, do not typically report dreams of being chased or threatened	11.03	22.07	15.17	51.72	88.97
39. Toddlers, aged 1–3 years, typically have difficulty falling asleep	13.01	44.52	30.82	11.64	55.48
40. Sixteen-year-olds require approximately 10.5 h of sleep within a 24-h period	8.90	23.97	34.25	32.88	91.10
41. Ten-year-olds require approximately 9.5 h sleep within a 24-h period	10.27	27.40	35.62	26.71	89.73
42. Adolescents sleep more on school nights than on non-school night	8.90	19.86	48.63	22.60	91.10
43. A toddler, aged 1–3 years, may have a sleep problem if they wake for more than 20 min during the night	7.53	30.14	41.78	20.55	58.22
44. Fifteen-year-olds require approximately 9 h of sleep within a 24-h period	7.53	28.08	38.36	26.03	61.64
45. Six-year-olds require approximately 13.5 h of sleep within a 24-h period	7.53	32.88	27.40	32.19	92.47

Tab. 2. Cont.

	0 (not true)	1 (somewhat or sometimes true)	2 (very true)	3 (don't know)	Cumulative Percent of False Responses
	%	%	%	%	%
46. If a sleeping infant (up to 24 months) stops breathing for 20 s or more. they may have sleep apnea (an absence of breathing)	6.16	13.01	34.25	46.58	65.75
47. Toddlers, aged 2–3 years, take one nap in the morning and one nap in the afternoon	11.03	37.93	37.24	13.79	88.97
48. Children, aged 6–10 years, demonstrate frequent body movements during their sleep	8.90	31.51	39.73	19.86	60.27
49. Ten-year-olds sleep the same amount of time on school nights as on non-school nights	14.38	32.19	21.92	31.51	78.08
50. Adolescents who snore may have sleep apnea (the absence of breathing)	7.53	23.29	33.56	35.62	66.44
51. Children begin to report having dreams at approximately age 3 years	8.90	35.62	32.19	23.29	67.81
52. Three-year-olds require approximately 14.8 h of sleep within a 24-h period	10.27	39.04	29.45	21.23	89.73
53. Four-year-olds are often awoken from their sleep by dreams	10.27	36.99	26.71	26.03	89.73
54. Difficulty breathing, sweating, and enuresis (bed-wetting) may be a sign of apnea (an absence of breathing) in children	5.52	22.07	26.21	46.21	73.79
55. Infants (up to 24 months) usually sleep soundly when they sleep with their parents	5.48	25.34	55.48	13.70	74.66
56. Children, aged 11–13 years, usually dream about animals	9.66	22.07	18.62	49.66	89.73
57. Infants should be put to bed when they are drowsy. not once they are asleep	10.27	24.66	51.37	13.70	48.63
58. From the age of 3 months, a consistent and pleasant bedtime routine can be established	9.59	17.81	60.27	12.33	39.73
59. Up until 2 years of age. television viewing at bedtime can be helpful in getting a child to sleep	52.74	25.34	10.27	11.64	47.26
60. Adolescents snore on a nightly basis	35.62	25.34	9.59	29.45	64.38
61. School-aged children are often sleepy during the day	15.07	38.36	30.82	15.75	84.93
62. Sometimes children get a second wind late in the day or evening and become overly alert. In these cases, the child needs sleep and must go to bed, despite their probable resistance	6.16	23.97	47.95	21.92	93.84

*The green-marked parts in the table show the correct answers for each question

60.27%. The questions with the most incorrect responses start with Question 35, which was incorrectly answered with a rate of 96.58%; Question 15 with a rate of 94.52%, and Question 62 with a rate of 93.84%. The questions answered mostly as "I don't know" start with Question 24, and which was answered with a rate of 54.11%; Question 38 with a rate of 51.72%, and Question 2 with a rate of 50,00%. In this study, only 2.74% of the parents answered more than 50% of the questions correctly.

According to the results of the One-Way ANOVA analysis performed to determine the difference between the respondents' PSKI scores and the number of children they had, the difference between the number of children for the subscale of "Normal Sleep" was found to be statistically significant at a 95% confidence level (F = 4.875; p = 0.009). According to the Post Hoc test results, the knowledge level of those who had three or more children was higher than those who had one child. The difference between the subscale of "Naps" scores according to the number of children was found to be statistically significant at the 95% confidence level (F = 7.301, p = 0.001). Those with two, three, or more children had higher scores than those with one child. The difference between the subscales of "Waking" (F = 3.174, p = 0.050) and "Middle Childhood" (F = 3.855, p = 0.023) scores according to the number of children was also significant and similarly the knowledge level of those who had three or more children was higher than those who had one child. The difference between the PSKI total scores according to the number of children was found to be statistically significant (F = 4.429, p = 0.008). Those with three or more children had higher scores than those with one or two children (Tab. 3).

Children were divided into 4 age groups (2, 3–5, 6–12, and 13–18-year-olds) according to the age groups specified in the consensus of the American Academy of

Tab. 3. Differentiation Analysis of the PSKI Scores according to the Number of Children of the Respondent

Subscales According to Sleep Characteristics	Number of children in the family	n	$\bar{x}$	S.D.	F	p	Difference
Normal Sleep	1	39	8.46	4.30	4.875	**0.009**^{Ø}	1–3 **(p = 0.009**$^{¥**}$**)**
	2	54	9.94	4.21			
	3	53	11.17	3.87			
Hours	1	39	3.56	1.77	0.919	0.401^{Ø}	-
	2	54	3.69	1.85			
	3	53	4.04	1.71			
Naps	1	39	2.36	1.35	7.301	0.001^{Ø}	1–2 **(p = 0.003**$^{¥**}$**)** 1–3 **(p = 0.005**$^{¥**}$**)**
	2	54	3.46	1.70			
	3	53	3.42	1.42			
Sleep Problems	1	39	7.79	3.70	2.357	0.098^{Ø}	–
	2	54	9.06	3.95			
	3	53	9.47	3.56			
Apnea⁄Snoring	1	39	1.00	1.08	1.923	0.150^{Ø}	–
	2	54	1.37	1.14			
	3	53	1.43	1.10			
Daytime Sleepiness	1	39	0.69	0.80	0.134	0.874^{Ø}	–
	2	54	0.76	0.64			
	3	53	0.75	0.59			
Body Movements	1	39	0.31	0.47	1.000	0.371^{δ}	–
	2	54	0.41	0.50			
	3	53	0.45	0.50			
Waking	1	39	5.18	2.87	3.174	0.045^{Ø*}	1–3 (p = 0.050$^{¥*}$)
	2	54	6.31	3.21			
	3	53	6.74	2.81			

Tab. 3. Cont.

Subscales According to Sleep Characteristics	Number of children in the family	n	$\bar{x}$	S.D.	F	p	Difference
Settling	1	39	3.72	1.67	0.440	0.645Ø	–
	2	54	3.98	1.57			
	3	53	4.00	1.45			
Dreams/Nightmares	1	39	17.05	6.35	2.288	0.105Ø	–
	2	54	18.13	4.30			
	3	53	16.08	4.43			
Infancy	1	39	3.49	0.56	2.955	0.055Ø	–
	2	54	4.05	0.55			
	3	53	3.67	0.50			
Early Childhood	1	39	2.37	0.38	0.355	0.702Ø	–
	2	54	2.57	0.35			
	3	53	2.30	0.32			
Middle Childhood	1	39	2.97	0.48	3.855	0.023Ø*	**1–3 (p = 0.025¥**)**
	2	54	2.63	0.36			
	3	53	2.56	0.35			
Adolescence	1	39	1.58	0.25	2.198	0.115Ø	-
	2	54	1.81	0.25			
	3	53	1.56	0.21			
PSKI Total Score	1	39	7.29	1.17	4.429	**0.008**δ**	**1–2 (p = 0.075U*) 1–3 (p = 0.002U**)**
	2	54	7.14	0.97			
	3	53	6.35	0.87			

Ø − the one-way analysis of variance (One-Way ANOVA), δ − Kruskal Wallis Test, ¥: Scheffe Test (Post Hoc Test), U− Mann Whitney U Test, $\bar{x}$ − Mean, S.D − Standard Deviation, * − p < 0.05, ** − p < 0.01; PSKI – Parents Sleep Knowledge Inventory.

Sleep Medicine. The average daily sleep duration of the children and their adequacy according to the consensus of the American Academy of Sleep Medicine [17] are calculated. In particular, it was determined that 25.00% (n = 19) of children between 3 and 5 years of age had sleep times below the consensus time and the ratio was 15.51% (n = 9) for 6–12 years of age.

When the presence of sleep disorder reported by the family and the adequacy of sleep durations according to the recomendations of the American Academy of Sleep Medicine was examined, it was found that the children of 14.81 % of the families who stated that their children did not have sleep problems had sleep durations below the recommendations of the consensus. There was a statistically significant relationship between the presence of sleep problems (family reported) and the adequacy of sleep duration (p = 0.001).

According to the adequacy of sleep durations within the framework of the consensus of the American Academy of Sleep Medicine, when children were divided into two groups as the children who sleep at recommended levels of adequate sleep durations and the children who sleep below the recommended levels of adequate sleep durations, the parents of children who met the recommendations for the duration of adequate sleep had higher PSKI total scores (t = –2.001, p = 0.047), the mean PSKI score for the children who sleep at recommended levels of adequate sleep durations was 19.37 ± 7.12 and the mean PSKI score for the children who sleep below the recommended levels of adequate sleep durations was 16.51 ± 6.71.

Discussion

In this study, which was conducted to examine parents' knowledge about healthy sleep in children, it was revealed that parents of children with developmental disability have insufficient knowledge about their children's sleep health.

The low rate of correct answers to the inventory questions in the present study indicates that the parents of children with developmental disability knowledge about their children's sleep is generally weak. In this study, PSKI total scores range from 0 to 39 points. The mean of PSKI's correctly answered questions is 19. It was determined that the percentages of wrong answers and answers given as "I don't know" are also high. In the current study, only 4 parents (2.74%) answered more than half of the questions correctly. The PSKI total scores ranged from one correctly answered question (1.6%) to 39 correctly answered questions (62.9%) in the original study [12], and only 13 (7.6%) parents scored >50% correct answers. The mean number of correctly answered PSKI questions was 20 (32%). When our study is examined together with the original study in which the inventory was developed, it can be said that the knowledge level of parents regarding their children's sleep is insufficient. In the present study, it is also seen that the level of knowledge of parents about the sleep of children in different age groups and about appropriate sleep durations is not at a very good level. In the literature, it is emphasized that the knowledge level of parents about the sleep of their children is insufficient [18]. In addition, in our study, 14.81% of the children's sleep durations were below the recommended values, while the parents stated that their children did not have any problems with sleeping. This information highlights a similar result with other studies that parents do not care much about sleep and have a low level of knowledge about sleep duration [19]. Although the PSKI total scores were very low, 73.97% of the participants in our study stated that their children did not have sleep problems. This may indicate that parents' awareness of this issue is low.

In our study, it can be said that although the parents of children with developmental disability knowledge about their children's sleep is insufficient, their children's daily sleep durations are generally close to the recommended sleep durations. Compared with parents who do not care about their children's sleep needs, Owens et al. reported that parents who predict their children's sleep needs correctly are more likely to report sleep durations that fit their children's sleep recommendations [20]. However, Owens and Jones reported a moderate and negative correlation between parental knowledge and parent-reported child sleep duration [19]. In our study, it was found that the parents of children with the recommended level of sleep duration had greater sleep-related knowledge than the parents of the children who did not have the recommended level of sleep duration.

The majority of the participants in our study were mothers. The reason for this is that individuals who generally take care of children with developmental disabilities are mothers. Similar to the literature, the participants were mostly mothers, and the number of fathers was limited [11]. The incompleteness of the data obtained from fathers can be stated as a deficiency in fathers' knowledge about pediatric sleep and in determining the differences in sleep approaches for the children.

According to the analysis of variance, it has been seen that the knowledge level of parents with 3 or more children was higher than those with only one child. This may indicate that the experience of childcare increases the knowledge level of parents about sleep. However, it should not be forgotten that the total scores obtained from the inventory are far below the maximum score that can be taken. In other words, although the knowledge level of parents who had more children is relatively high, in general, their knowledge level of childhood sleep is low.

Strengths and Weaknesses of the Inventory

There are few questionnaires in the literature that question the knowledge levels of parents with regard to their children's sleep-related characteristics. The PSKI, which consists of many dimensions and includes questions about different age groups, offers the opportunity to evaluate this feature in detail. Evaluating the knowledge level of parents about healthy sleep is important for health professionals working with children. Considering that sleep disorders will negatively affect interventions for children with developmental disabilities, we can emphasize that it is necessary to determine the sleep-related characteristics of children and the knowledge level of parents on this issue.

On the other hand, the fact that the PSKI consists of 62 questions makes it difficult to apply in the clinic. In addition, the PSKI questions were defined as themes such as sleep aspects depending on the age of the child, normal sleep, and sleep problems. Sleep-related features created depending on the age of the child were established in accordance with the norms of child development for age groups from infancy to adolescence [12,21]. The developmentally normal sleep theme included 36 questions about sleep related to the appropriate amount of sleep a child of a certain age would need, naps during the day, normal sleep habits, or types of dreams. We think that the level of knowledge of the families on this issue is insufficient due to the fact that certain ages and sleep durations are studied by giving certain hours and the number of questions in this area is high. In clinical use, dividing the survey questions according to age groups may both shorten the application period and enable the parents to better reveal their level of knowledge about the relevant age.

Conclusions

The present study reveals that parents' knowledge about their children's sleep is extremely insufficient. We can point out that the levels of knowledge about sleep in parents of children with developmental disability are an undetermined factor. In addition, we emphasize the need to increase the variety of surveys that question parents' information about the state of sleep of the child, examine these in detail in terms of psychometric properties, and increase the number of studies on parents' knowledge levels.

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Conflicts of Interest
The authors have no conflict of interest to declare.

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