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Sleep Habits and Problems among Children Aged 5–15 Years in Northern Cyprus

Kıbrıs'ta 5–15 Yaş Arası Çocuklarda Uyku Alışkanlıkları ve Sorunları

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Abstract

Objective: This study aims to examine the sleep habits of children living in Northern Cyprus and to identify socio-demographic factors that influence these habits.

Materials and Methods: Designed as a cross-sectional, descriptive, and comparative study, the research was conducted between September 1, 2023, and April 1, 2024, in a pediatric outpatient clinic. A total of 182 children aged 5–15 and their parents participated. Ethics committee approval and written informed consent were obtained. Data were collected using a Personal Information Form and the Children's Sleep Habits Questionnaire (CSHQ), which demonstrated high internal consistency (Cronbach's alpha = 0.812).

Results: Findings revealed that 24.7% of the children had clinically significant sleep problems. A statistically significant difference was found between gender and total CSHQ scores ($p < 0.05$), with boys scoring higher than girls. However, no significant differences were observed based on age or educational level ($p > 0.05$). When comparing total and subscale scores based on the presence of clinical sleep problems, all subscales except bedwetting showed statistically significant differences ($p < 0.05$). These subscales included difficulty waking in the morning, parasomnias related to sleep disruption, morning wake-up behavior, sleep onset delay, sleep duration, need to sleep with others, daytime sleepiness, sleep anxiety, sleep-disordered breathing, and other parasomnias.

Conclusion: The findings highlight that sleep problems are prevalent among children and are associated with specific behavioral and demographic factors. Early identification and intervention for childhood sleep issues may contribute positively to children's overall development and well-being.

Keywords: Sleep habits, sleep disorders, child, nursing, Northern Cyprus

Öz

Amaç: Bu araştırmanın amacı, Kuzey Kıbrıs'ta yaşayan çocukların uyku alışkanlıklarını ve bu alışkanlıkları etkileyen sosyo-demografik faktörleri belirlemektir.

Gereç ve Yöntem: Kesitsel, tanımlayıcı ve karşılaştırmalı desenle yürütülen çalışmaya, 1 Eylül 2023–1 Nisan 2024 tarihleri arasında bir çocuk polikliniğine başvuran 5–15 yaş arası 182 çocuk ve ebeveynleri katılmıştır. Çalışma için etik kurul onayı ve yazılı gönüllü onam alınmıştır. Veriler, Kişisel Bilgi Formu ve Çocuk Uyku Alışkanlıkları Anketi (ÇUAA) ile toplanmış; anketin iç tutarlılık katsayısı 0,812 olarak hesaplanmıştır.

Bulgular: Katılımcıların %24,7'sinde klinik düzeyde uyku sorunu saptanmıştır. Cinsiyet ile ÇUAA toplam puanları arasında anlamlı bir fark bulunmuş ($p < 0,05$) ve erkek çocukların puanlarının daha yüksek olduğu belirlenmiştir. Yaş ve eğitim düzeyine göre anlamlı bir fark saptanmamıştır ($p > 0,05$). Klinik uyku sorununa göre yapılan karşılaştırmalarda; gece altını ıslatma dışındaki tüm alt boyutlarda anlamlı farklılıklar bulunmuştur ($p < 0,05$). Bu boyutlar arasında sabah zor uyanma, uykunun bölünmesiyle ilgili parasomniler, sabah uyanma şekli, uykuya geçiş güçlüğü, uyku süresi, başkasıyla yatma ihtiyacı, gündüz uykululuğu, uyku kaygısı, uykuda solunumun bozulması ve diğer parasomniler yer almaktadır.

Sonuç: Elde edilen bulgular, çocukluk dönemindeki uyku alışkanlıklarının çok boyutlu bir şekilde ele alınması gerektiğini ve belirli demografik faktörlerin uyku kalitesi üzerinde etkili olabileceğini göstermektedir.

Anahtar Kelimeler: Uyku alışkanlıkları, uyku bozuklukları, çocuk, hemşirelik, Kuzey Kıbrıs

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Introduction

Sleep is an indispensable and fundamental requirement of human life. Although it is often described as a "half-death" in reality, it is a physiological process characterized by a biologically active state of unconsciousness, in which bodily systems slow down, allowing living beings to rest (1,2). The influence of sleep on maintaining a healthy life extends far beyond mere rest; it is also recognized as a critical factor that directly impacts cognitive, emotional, and physical functions (3).

According to Buysse (4), health cannot be defined solely as the absence of disease; likewise, sleep health cannot be explained merely by the absence of sleep disorders. Sleep is a natural process that varies depending on an individual's age, biological rhythm, and living conditions. For adults, the average sleep duration is approximately 7–8 hours, whereas in childhood, this duration differs significantly according to age (2,5). While newborns sleep an average of 12–16 hours per day, this duration decreases to 8–10 hours during adolescence (6).

In childhood, sleep differs not only in duration but also in structure. During this period, children exhibit a polyphasic sleep pattern, sleeping multiple times throughout the day and night. Over time, this pattern transitions to a monophasic pattern during the school-age years, when children, similar to adults, rely on a single night-time sleep period (7,8).

Sleep plays a vital role in numerous aspects of children's lives, ranging from physical growth and emotional regulation to learning, memory processes, and immune system function. However, in recent years, changes in lifestyle, exposure to digital screens, academic pressure, and environmental factors have adversely affected children's sleep patterns (9,10). Sleep disorders can have lasting consequences not only on daily functioning but also on children's physical and mental health in the long-term (11).

A comprehensive understanding of children's sleep problems requires multidimensional approaches. In this context, it is important to focus not only on parental perceptions but also on the experiences of children, which vary according to their age groups. The scarcity of data in the literature on this subject underscores the need for new studies, particularly those supported by local evidence. Accordingly, this study aims to examine the sleep habits of children living in Northern Cyprus and the factors influencing these habits.

Aim of the Study

The aim of this study was to identify the sleep habits of children aged 5–15 years living in Northern Cyprus and the socio-demographic factors influencing these habits. Within this scope, variables such as sleep onset latency, total sleep duration, frequency of nighttime awakenings, and clinically significant sleep problems were analysed using various statistical method. The findings of the study are intended to contribute to the development of individualized recommendations for improving children's sleep patterns and raising awareness among families on this issue.

Research Design

This study was conducted using cross-sectional, descriptive, and comparative method.

Research Setting, Timeframe and Sample

The study was carried out between September 1, 2023, and April 1, 2024, with children aged 5–15 years and their parents who presented to the Pediatric Outpatient Clinic of Near East University Hospital, located in the Nicosia region of Northern Cyprus.

Sample Size

The sample size was calculated using the following formula:

$n = (Z^2 \times P \times q)/d^2$

$Z = 1.96$ (95% confidence level),

$P = 0.12$ [prevalence of sleep problems; Malloggi et al. (12)],

$q = 1 - P = 0.88$,

$d = 0.05$ (margin of error).

The calculated sample size was n = 163; however, to increase the statistical power of the study, the sample size was increased to 182 participants.

Inclusion Criteria

The inclusion criteria for the study were as follows:

- The participating child was between 5 and 15 years of age,
- The parents voluntarily agreed to participate in the study and signed a written informed consent form,
- The child presented to the Pediatric Outpatient Clinic of Near East University Hospital for any reason.

Instruments for Data Collection

Data were collected between September 1, 2023, and April 2024 using a questionnaire technique. The following instruments were employed during the data collection process:

Personal Information Form

This form, developed by the researcher, consists of three questions designed to determine the children's basic socio-demographic characteristics, such as age, sex, and educational level.

Children's Sleep Habits Questionnaire

Developed by Owens et al. (3) and adapted into Turkish with established validity and reliability by Fiş et al. (13), this scale evaluates children's sleep habits over the past week on the basis of parental observations.

The scale consists of 33 items and is scored on a three-point Likert scale (3 = usually, 2 = sometimes, 1 = never), yielding a total score ranging from 33 to 99. Higher scores indicate that the child experiences more sleep-related problems. A cut-off score of 42 was established for identifying clinically significant sleep problems.

In the present study, the internal consistency coefficient (Cronbach's alpha) of the scale was found to be 0.812, indicating a high level of reliability. The scale was not administered directly to the children; however, it was observed that, for certain items, parents considered their child's self-reported experiences when providing responses. This approach contributed to reducing potential bias errors.

Statistical Analysis

Data analysis was performed using IBM SPSS Statistics Version 22.0.

- Descriptive statistics: For continuous variables, arithmetic mean, standard deviation, minimum, and maximum values were calculated; for categorical variables, frequency and percentage distributions were determined.
- Inferential statistics: The distribution characteristics of the data were examined.
- For normally distributed data, independent samples t tests and one-way analysis of variance (ANOVA) were applied.
- For non-normally distributed data, the Mann–Whitney U test and Kruskal–Wallis H test were used.

Statistical significance was set at $p < 0.05$ for all analyses.

Ethical Issues

The study was approved by the Scientific Research Ethics Committee of Near East University (approval number: NEU/2023/110-1688, date: 12.06.2024). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Written informed consent was obtained from all participants after they were informed about the purpose of the research. Participants were advised that they could withdraw from the study at any time. Data confidentiality was maintained, and no personally identifiable information was recorded at any stage. The findings are securely stored and will be presented to the relevant institutions if needed.

Findings

Table 1 presents the distribution of the participating children according to sex, age, and educational level. Approximately half of the participants were male (51.1%), and half were female (48.9%). In terms of age group, the highest proportion was in the 9–12–year group (48.9%), followed by the 5–8-year group. The majority of the children were receiving education at the primary school (37.9%) and middle school (42.9%) levels.

Table 2 presents the findings related to the children's bedtime, wake-up time, and sleep duration. A total of 67.6% of the children were found to fall asleep at or after 22:00, while 67.0% woke up between 07:00 and 07:59 in the morning. A total of 71.4% of the participants reported sleeping an average of 8–10 hours per day. In addition, 50.5% of the children remained awake for 1–29 minutes during the night, whereas 42.9% did not wake at all throughout the night.

Table 3 presents the distribution of clinical sleep problems based on the scores obtained from the Children's Sleep Habits Questionnaire (CSHQ). The findings indicate that 24.7% of the children experienced sleep problems at the clinical level. It was determined that one-quarter of the children included in the study had sleep problems.

Table 4 presents the findings of the comparison of total CSHQ scores according to the children's socio-demographic characteristics. The analyses revealed no statistically significant differences in the CSHQ scores by age group or educational level ($p > 0.05$). In contrast, a significant difference was found in relation to sex ($p < 0.05$). Cohen's d values of 0.1, 0.3, 0.5, and 1 or above were considered to indicate a small, medium, large or very large difference, respectively. The effect size (Cohen's $d = 0.36$) indicated a moderate difference, with male children exhibiting higher sleep problem scores than female children did.

In this study, the independent samples t-test was applied to data that met the assumption of a normal distribution, while the Mann–Whitney U test was used for data that did not. A comparison of total and subscale scores according to the presence of clinical sleep problems revealed statistically

Table 1. Findings related to children's socio-demographic characteristics.

Variables	Groups	n	%
Sex	Male	93	51.1
	Female	89	48.9
Age group	5–8 years	53	29.1
	9–12 years	89	48.9
	13–15 years	40	22.0
Level of education	Preschool	7	3.8
	Primary school	69	37.9
	Middle school	78	42.9
	High school	28	15.4
Total		**182**	**100.0**

Table 2. Descriptive statistics regarding children's sleep habits.

Variables	Groups	n	%
Bedtime	Between 8:00–9:59 p.m.	59	32.4
	After 10 p.m.	123	67.6
Wake-up time	06:00–06:59 a.m.	55	30.2
	07:00–07:59 a.m.	122	67.0
	08:00–08:59 a.m.	3	1.6
	09:00–09:59 a.m.	2	1.1
Amount of sleep	6–8 hours	22	12.1
	8–10 hours	130	71.4
	10–12 hours	28	15.4
	12 hours	2	1.1
Wake time (min.)	Absent	78	42.9
	1–29 minutes	92	50.5
	30–59 minutes	4	2.2
	60–119 minutes	7	3.8
	120 minutes and over	1	0.5
Total		**182**	**100.0**

Min: Minimum, a.m.: Before midday, p.m.: After midday.

Table 3. Distribution of clinical sleep problems according to children's CSHQ scores.

Clinical sleep problems	n	%
Absent	137	75.3
Present	45	24.7

CSHQ: Children's Sleep Habits Questionnaire.

significant differences ($p < 0.05$) for all the subscales—except nocturnal enuresis—including difficulty waking in the morning, parasomnias related to sleep fragmentation, morning waking behaviour, sleep duration, sleep onset, the need to sleep with another person, and daytime sleepiness (Table 5), as well as sleep anxiety, sleep-disordered breathing, and other parasomnias (Table 6).

Table 4. Comparison of CSHQ total scores according to socio-demographic characteristics.

Variables	Groups	n	Mean	SD	t/F	SD	p	d
Sex	Female	89	37.52	6.44	-2.418	180	0.017	0.36
	Male	93	39.87	6.68				
Age group	5–8 years	53	39.19	6.75	2.216	2–179	0.112	-
	9–12 years	89	37.74	6.71				
	13–15 years	40	40.28	6.17				
Level of education	Preschool/primary school	76	39.28	6.99	1.385	2–179	0.253	-
	Middle-school	78	37.79	6.30				
	High-school	28	39.79	6.57				

SD: Standard deviation, CSHQ: Children's Sleep Habits Questionnaire.

Table 5. Comparison of total CSHQ scores and subscale scores (normally distributed) according to clinical sleep problems.

Score	Clinical sleep problems	n	Mean	SD	Difference	S.H.	t	SD	p	d
Total score	Absent	137	35.49	2.97	-13.07	0.76	-17.084	55.2	<**0.001**	3.71
	Present	45	48.56	4.84						
Difficulty waking in the morning	Absent	137	1.14	0.28	-1.06	0.12	-8.559	47.4	<**0.001**	2.25
	Present	45	2.20	0.81						
Parasomnias related to sleep fragmentation	Absent	137	1.18	0.25	-0.19	0.04	-4.222	180	<**0.001**	0.72
	Present	45	1.37	0.29						
Morning waking behaviour	Absent	137	1.81	0.47	-0.45	0.11	-4.229	59.3	<**0.001**	0.86
	Present	45	2.26	0.65						
Sleep duration	Absent	137	1.29	0.38	-0.53	0.08	-6.392	60.4	<**0.001**	1.28
	Present	45	1.82	0.51						
Sleep onset	Absent	137	1.35	0.46	-0.84	0.11	-7.442	56.4	<**0.001**	1.59
	Present	45	2.19	0.71						
Need to sleep with another person	Absent	137	1.10	0.24	-0.22	0.06	-3.476	55.0	**0.001**	0.76
	Present	45	1.32	0.40						
Daytime sleepiness	Absent	137	0.24	0.45	-0.40	0.11	-3.504	55.9	**0.001**	0.75
	Present	45	0.64	0.72						
Nocturnal enuresis	Absent	137	1.15	0.25	-0.11	0.06	-1.954	59.8	0.055	-
	Present	45	1.26	0.35						

SD: Standard deviation, CSHQ: Children's Sleep Habits Questionnaire.

Table 6. Comparison of CSHQ subscale scores (non-normally distributed) according to clinical sleep problems.

Score	Clinical sleep problems	n	Average rank	Rank total	Z	p	d
Sleep anxiety	Absent	137	83.80	11480.50	-4.173	<**0.001**	0.31
	Present	45	114.94	5172.50			
Sleep-disordered breathing	Absent	137	87.20	11947.00	-2.974	**0.003**	0.22
	Present	45	104.58	4706.00			
Other parasomnias	Absent	137	82.56	11310.50	-4.817	<**0.001**	0.36
	Present	45	118.72	5342.50			

CSHQ: Children's Sleep Habits Questionnaire.

Discussion

In this study, the sleep habits and distribution of clinical sleep problems among children aged 5–15 years who presented to the Pediatric Outpatient Clinic of Near East University Hospital in the Nicosia region of Northern Cyprus were examined. Approximately one-quarter (24.7%) of the children experienced clinical-level sleep problems. Malloggi et al. (12) reported a prevalence of 11.3% for school-age sleep disorders, Bharti et al. (14) reported a 42.7% rate of sleep problems, Demir-Uysal and Çalışır's (15) reported a 72.9% sleep problem rate, Ünsal et al. (16) reported a 26.9% sleep problem rate, Lewien et al. (17) reported sleep problems in 22.6% of children and 20.0% of adolescents and Durmuş et al. (18) reported a 59% sleep problem rate, which are consistent with the 25–77% range reported in the literature for children. These results support the notion that sleep problems are common and clinically significant in childhood.

The finding that compared with female children, male children had significantly higher CSHQ scores reflects the complex sex-related patterns reported in the literature. Some studies (15-19) have indicated that sleep problems are more prevalent among boys, whereas other studies (20,21) have reported no significant sex differences. Factors such as higher levels of physical activity, later bedtimes, and psychological influences among boys may explain this outcome (22). Additionally, the literature has emphasized that biological and hormonal differences between sexes may influence both the quality and duration of sleep (23).

The absence of a statistically significant relationship between sleep habits and age group or educational level in this study is noteworthy. Some studies (3,7) have reported decreased sleep duration and increased sleep problems with advancing age; however, this trend was not clearly evident in our findings. Nevertheless, a systematic review by Matricciani et al. (24) demonstrated that modern living conditions and increased technological engagement contribute to a general decline in children's sleep duration. In our study, there was a tendency towards reduced sleep duration with increasing age, although this did not reach statistical significance. This may be attributable to the sample size or the measurement method used.

The observation that children with clinical sleep problems had significantly higher total and subscale CSHQ scores—particularly in areas such as difficulty waking in the morning, sleep fragmentation, parasomnias, difficulty initiating sleep, and daytime sleepiness—underscores the multifactorial and complex nature of sleep problems. This aligns with the findings of Williamson et al. (25), who, in a large-sample study, reported that sleep problems are associated with behavioural and developmental issues. Similarly, Yayan et al. (26) highlighted the link between children's sleep habits and psychosocial status and reported that these problems affect not only physical but also emotional health.

The significant associations between clinical sleep problems and subscales related to sleep anxiety, sleep-disordered breathing, and other parasomnias are consistent with the literature on the types and clinical implications of sleep problems (20). In particular, sleep-disordered breathing in children contributes to growth impairment, learning difficulties, and behavioural problems (27), underscoring the importance of early diagnosis and intervention.

The mean CSHQ score in our study (38.72 ± 6.65) was lower than the values reported by Lionetti et al. (28) and Stafford et al. (29). This difference may be related to sample characteristics, cultural factors, and parental perceptions of sleep problems. Sleep habits, sleep environments, and parental attitudes can vary significantly across cultures (30). Moreover, recruiting participants from a general outpatient setting rather than a specialized clinical population may have resulted in a sample with less severe sleep problems.

Finally, it should be noted that the factors influencing children's sleep problems are becoming increasingly diverse. Research has demonstrated the effects of increased screen time, social media use, digital devices, and elevated stress levels on sleep health (31,32). In this context, comprehensive interventions aimed at preserving and improving sleep health are essential.

Study Limitations

This study has several limitations. Its cross-sectional design does not allow for causal inferences. Moreover, the findings are limited to the Northern Cyprus sample, which may restrict generalizability. In addition, the absence of a control group for comparison and the use of only one parent-reported scale without objective sleep assessments, such as actigraphy, may limit the robustness of the results. Future studies incorporating multiple measurement tools and a control group could provide more comprehensive and generalizable findings.

Conclusion

This study investigated the prevalence of sleep habits, clinical sleep problems, and associated factors among children aged 5–15 years in the Nicosia region of Northern Cyprus. These findings indicate that male children are at greater risk for sleep problems and that sleep duration decreases significantly with increasing age. Furthermore, approximately one-quarter of the children were found to have clinical sleep problems, which had notable effects across various subdomains. These results are consistent with the international literature supporting the significant effects of sleep problems on children's physical and psychosocial development. Nonetheless, the influence of cultural and environmental factors on sleep habits warrants particular attention.

Ethics

Ethics Committee Approval: The study was approved by the Scientific Research Ethics Committee of Near East University (approval number: NEU/2023/110-1688, date: 12.06.2024). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Informed Consent: Written informed consent was obtained from all participants after they were informed about the purpose of the research.

Footnotes

Authorship Contributions

Concept: C.Ö., Design: D.A., C.Ö., Data Collection or Processing: D.A., Analysis or Interpretation: D.A., C.Ö., Literature Search: D.A., Writing: D.A., C.Ö.

Conflict of Interest: No conflict of interest was declared by the authors.

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