



Sleep Health Among School Children in Turkey

Türkiye’de Okul Çağı Çocuklarında Uyku Sağlığı

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Abstract

Objective: This study aimed to determine the prevalence of sleep-related breathing disorders (SRBDs) among school children in Kars, Turkey. A recently published study conducted in Kars province examined the SDBRs among elementary school children. In this study, the socio-demographic characteristics of children and their relationship with SRBDs were also examined. This brief report aims to introduce this published study inland.

Materials and Methods: Six different schools were determined as the universe of the research, and a total of 1,421 children aged 6-13 were included in the study. A fourteen-item data collection form was used to evaluate the socio-demographic characteristics of the participants. An education and information seminar program on sleep disorders was conducted by the researchers before starting the data collection. The Pediatric Sleep Questionnaire (PSQ) was used on parents to determine SRBDs after this training program.

Results: The mean age of the study group’s was 9.37±1.91 years (54.2% girls), the prevalence of SRBDs was 17.2%. The PSQ scores were significantly higher in boys and older age groups (9-13 years). Associations were observed between low academic achievement and breathing problems, snoring, morning headache, attention deficit/hyperactivity disorder, growth retardation, nocturnal enuresis, and obesity categories.

Conclusion: Sleep is as crucial as nutrition in children. Children with adequate sleep patterns develop better mental and physical health. Recognizing sleep problems in the early age period and establishing good sleep practices in childhood will enable them to live healthy for many years.

Keywords: Children, pediatric sleep questionnaire, sleep health, sleep related breathing disorders

Öz

Amaç: Bu çalışmanın amacı, Kars ilinde okul çağı çocukları arasında uykuya bağlı solunum bozuklukları (SDBRs) sıklığını belirlemektir. Çalışmada ayrıca, çocukların sosyo-demografik özellikleri ve SRBD’ler ile ilişkileri araştırılmıştır. Bu kısa yazı, yurt dışında yakın zamanda yayımlanmış olan çalışmamızı, yurt içinde tanıtmayı amaçlamaktadır.

Gereç ve Yöntem: Araştırmanın evreni olarak, altı farklı okul belirlenmiş ve araştırmaya 6-13 yaş arası toplam 1,421 çocuk dahil edilmiştir. Katılımcıların sosyo-demografik özelliklerini değerlendirmek için 14 maddelik veri toplama formu kullanılmıştır. Araştırmaya başlamadan önce, araştırmacılar tarafından okullarda, öğrenci ve veliler için uyku bozuklukları ile ilgili bir eğitim ve bilgilendirme seminer programı yapılmıştır. Pediatrik Uyku Anketi (PSQ) ve veri toplama formu, bu eğitim programından sonra çocuklarda uykuya bağlı solunum bozuklukları ve bu durumu etkileyen unsurları belirlemek için ebeveynler üzerinde uygulanmıştır.

Bulgular: Çalışma grubunun yaş ortalaması 9,37±1,91 (%54,2 kız), uykuya bağlı solunum bozuklukları prevalansı %17,2 olarak saptandı. PSQ puanları, erkeklerde ve görece daha büyük yaş grubunda (9-13 yaş) olan çocuklarda anlamlı olarak daha yüksekti. Düşük akademik başarı puanları ile; nefes alma sorunları, horlama, sabah baş ağrısı, dikkat eksikliği hiperaktivite bozukluğu, büyüme geriliği, gece idrar kaçırma ve obezite arasında oranda yüksek istatistiksel ilişki saptandı.

Sonuç: Uyku, çocuklarda beslenme kadar önemlidir. Yeterli uyku düzenine sahip çocuklar, daha iyi zihinsel ve fiziksel sağlık geliştirirler. Bu nedenle, uyku sorunlarının erken yaşlarda fark edilmesi ve çocukluk döneminde sağlıklı bir uyku alışkanlığı kazandırılması, onların uzun yıllar sağlıklı olarak yaşamalarını sağlayacaktır.

Anahtar Kelimeler: Çocuklar, pediatrik uyku anketi, uyku sağlığı, uyku ilişkili solunum bozuklukları

Introduction

As every living creature feels, sleep is essential for the body to renew itself, and gather energy. Physical growth and mental development can be possible with adequate sleep in children and adolescents. Sleep directly effects growth, especially in early infancy. Growth hormone is produced when children

are asleep. Children during periods of rapid growth often need more sleep. In toddlers, sleep is necessary for motor skill development and executive attention sleep requirements is age-dependent and sleep pattern change as children get older the health, well-being, learning, behavior and even weight of children who do not get enough and quality sleep are adversely affected (1). It has been reported that sleep problems

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in childhood and adolescence impair learning capacity and reduce academic achievement (2,3). Sleep deficiency at an early age can lead to long-term sleep problems in later life. For this reason, it's substantial to comprehend the sleep problems of children, in order to detect in the early period and prevent negative consequences. In addition to harming physical and mental development, sleep deprivation also causes behavioral problems (3). Contrary to popular belief, sleep disorders are not uncommon among children. The prevalence of sleep disorders is between 20% to 40% in children aged 1 to 5 years. Several studies reported that sleep related breathing disorders (SRBDs) are highly prevalent among school children (2-4). A recently published study conducted in Kars province examined the SDBRs among elementary school children (5). The Kars province, is located in relatively less developed district of Turkey. Social development indicators, such as education, prosperity, and health are rank below national averages. Also schooling rate in elementary and middle education is less than 70% while in the western area more than 90% (6). It is crucial to assess the frequency and related factors of SRBDs in school-aged children due to their impact on academic achievement, particularly in developing regions of Turkey that need well trained human resources. Besides to evaluate prevalence and related factors of SRBDs, this study also aimed to attract attention of parents about children's sleep problems. With this purpose the researches were organised an educational seminary program prior to study for parents and children about sleep disorders at the schools.

Materials and Methods

Six different schools were determined as the universe of the research, and a total of 1,421 children aged 6-13 were included in the study. A fourteen-item data collection form was used to evaluate the socio-demographic characteristics of the participants. An education and information seminar program on sleep disorders was conducted by the researchers before starting the data collection. The Pediatric Sleep Questionnaire (PSQ) was used on parents to determine SRBDs after this training program (7). The respondents were investigated in eight categories [daytime sleepiness, respiratory problems, snoring, nocturnal enuresis, morning headache, growth retardation, attention deficit/hyperactivity disorder (ADHD) and obesity]. Parents were investigated whether their children had a diagnosis of growth retardation and ADHD. Weight and height measurements were determined to calculate the body mass index. Parents answered the PSQ and socio-demographic data form. In addition, data were collected through teachers.

The study was approved by Kars Provincial Education Regional Director and Kafkas University Faculty of Medicine Ethics Committee (protocol number: 80576354-050-99/77), and all participants provided verbal informed consent.

Statistical Analysis

As descriptive statistics, percentage, frequencies, arithmetic means, distributions, and standard deviations were examined. Data were adjusted for gender and age. To compare variables

pearson's chi-square and Fisher's Exact tests were performed. Odds ratio values were calculated for risk assessment among categorical variables.

Results

The mean age of the study group's was 9.37 ± 1.91 years (54.2% girls), the prevalence of SRBDs was 17.2%. The PSQ scores were significantly higher in boys and older age group (9-13 years). Associations were observed between low academic achievement and breathing problems, snoring, morning headache, ADHD, growth retardation, nocturnal enuresis, and obesity categories. It has been observed that there is a strong relationship between the ADHD and family's economic status, and education level. The results are broadly summarized in Table 1.

Discussion

According to the PSQ, the prevalence of SRBDs among school-aged children in Kars, Turkey was relatively low compared to results reported worldwide (8-10). The findings of this study showed an association between SRBDs and frequent infections. It has been found that boys had a higher prevalence of SRBD than girls in this study. The most striking association was observed in this study between low academic achievement and ADHD, snoring, respiratory problems, and nocturnal enuresis; these results are in agreement with previous studies (2,3,10). This study also aimed to raise awareness of the importance of sleep disorders in parents, who are responsible for the growth of a healthy generation. Such education with parents was expected to encourage the practice of good sleep hygiene in their children. Due to its negative impact on academic performance, good sleep behavior should be taught to children at an early age. The unique aspects of this study are, to the best of our knowledge, that it is the first study of this issue to be made in this specific region, and even in Turkey. The large sample size was the strength of this study. In this study, it was also aimed to raise awareness about the importance of sleep disorders in the population. Because of its impact on health and academic performance, good sleep behavior should be acquired to children at an early age. For this, parents should be made aware of sleep health and they should be encouraged to provide their children with the necessary sleep hygiene.

Conclusion

It is crucial to know that insufficient or fragmented sleep can impair children's physical and mental health, while adequate sleep could increase their academic success. The most important contribution of this study to the region was to draw the attention of parents about children's sleep problems by organizing a educational seminary program for parents and children about sleep disorders at the schools. Sleep disorders are often neglected among physicians as well as in society. To the best of our knowledge, this is the first study of its kind to be conducted in this specific region in. The findings of our study, which provides data-based evidence, are expected to attract the attention of health care providers.

Table 1. Sleep related breathing disorders and their relationship with socio-demographic characteristics

Characteristics	Age	Gender	MEL*	FEL*	EL*	NS*	HS*	FI*	CD*	RWF*	RWT*	AS*	BMI*
	p	p	p	p	p	p	p	p	p	p	p	p	p
SRBDs*													
Usually snores	0.310	0.006	0.170	0.021	0.477	0.345	0.095	<0.001	0.020	0.495	0.432	0.002	0.127
Always snores	0.469	0.365	0.277	0.111	0.430	0.309	0.166	0.005	0.003	0.481	0.309	0.037	0.385
Snores loudly	0.026	0.244	0.345	0.079	0.349	0.026	0.316	0.001	0.015	0.648	0.154	0.004	0.066
Heavy breathing	0.194	0.022	0.006	0.002	0.140	0.534	0.013	<0.001	0.006	0.099	0.355	0.014	0.002
Trouble breathing	0.042	0.531	0.032	0.026	0.188	0.341	0.216	<0.001	0.001	0.057	0.106	0.005	0.052
Witnessed apneas	0.562	0.397	0.357	0.305	0.168	0.282	0.030	0.090	0.076	0.606	0.547	0.171	0.504
Month open during day	0.233	0.040	0.056	0.003	0.049	0.194	0.130	0.136	0.094	0.183	0.125	0.006	0.243
Dry month on awakening	0.012	0.430	<0.001	<0.001	0.001	0.011	<0.001	0.001	0.002	0.068	0.006	<0.001	0.388
Not refreshed in the morning	<0.001	0.006	<0.001	<0.001	0.021	0.002	0.009	0.008	0.001	0.015	0.074	0.089	0.281
Problem with sleepiness	<0.001	0.034	0.027	0.008	0.176	0.019	0.005	0.147	0.003	0.088	0.221	0.399	0.320
Sleepy per teachers	0.022	0.026	0.490	0.367	0.184	0.422	0.090	0.438	0.008	0.579	0.385	0.122	0.716
Hard to wake up	<0.001	0.384	0.035	0.012	0.253	0.030	0.004	0.096	0.274	0.004	0.212	0.074	0.522
Does not listen	0.373	0.010	<0.001	0.003	0.001	0.342	0.002	0.003	0.005	<0.001	0.001	0.001	0.022
Difficulty organizing	0.045	0.011	<0.001	0.016	0.001	0.391	0.002	0.016	<0.001	0.001	<0.001	0.001	0.137
Easily distracted	0.403	0.070	0.007	0.313	<0.001	0.329	0.011	<0.001	0.004	0.001	0.002	0.001	0.483
Fidgets (fidgetiness)	0.006	<0.001	0.414	0.241	0.069	0.004	0.022	0.002	0.024	0.004	0.015	<0.001	0.109
On the go (restlessness)	0.049	<0.001	<0.001	0.001	<0.001	0.416	0.049	0.069	0.046	0.267	0.007	<0.001	0.115
Interrupt (others)	0.049	<0.001	<0.001	0.001	<0.001	0.416	0.049	0.069	0.046	0.267	0.007	<0.001	0.115
Nocturnal enuresis	<0.001	0.309	0.166	0.122	<0.001	0.024	0.076	0.082	0.014	0.083	0.197	0.010	0.470
Morning headache	0.031	0.013	0.001	<0.001	0.160	0.082	0.016	0.001	<0.001	0.020	0.189	0.025	0.110
Delayed growth	0.400	0.040	0.001	<0.001	0.007	0.002	0.228	0.002	<0.001	0.001	0.017	0.00	0.368
Parents reported obesity	0.018	0.012	0.128	0.296	0.192	0.224	0.106	0.108	0.034	0.045	0.475	0.022	<0.001

*SRBDs: Sleep related breathing disorders, MEL: Mother's education level, FEL: Father's education level, EL: Economic level, NS: Number of siblings, HS: Household smoking, FI: Frequency of infection, CD: Chronic diseases, RWF: Relationship with friends, RWT: Relationship with teachers, AS: Academic success, BMI: Body mass index, p<0.005

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Ethics

Ethics Committee Approval: The study was approved by Kars Provincial Education Regional Director and Kafkas University Faculty of Medicine Ethics Committee (protocol no: 80576354-050-99/77, date: 13.05.2015).

Informed Consent: All participants provided verbal informed consent.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: H.Ç., S.A., Design: H.Ç., S.A., Data Collection or Processing: H.Ç., Analysis or Interpretation: H.Ç., Literature Search: H.Ç., Writing: H.Ç., S.A.

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