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Evaluation of the effect of the COVID-19 pandemic on sleep disorders and nutrition in children

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Abstract

Aims: The aim of the study was to evaluate the possible changes in sleep behavior and nutrition in children during the pandemic period.

Methods: One hundred fourteen parents who accepted to participate in the study aged 18 and over and who had children between the ages of 6 and 16 were included in the study. A questionnaire was carried out after written consents were obtained. In the first part of the questionnaire, there were a total of 9 questions including socio-demographic information and nutritional characteristics, and the second part included the "Sleep Disturbance Scale for Children" (SDSC). The data were analyzed with the SPSS 20 statistical program.

Results: The total number of participants was 114 parents; 64 (56%) of the children were girls and 50 (43.9%) were boys. Among the participants, the number of children who had COVID-19 was 38 (33.3%). There was no statistically significant relationship between going through COVID-19 status and the variables examined in general. The proportion of participants who stated that if the pandemic period was prolonged, COVID-19 would not change their diet was found to be statistically significant ($P = .038$). The SDSC score was found to be significantly high in girls ($P < .05$).

Conclusion: Sleep and nutritional disorders affect the quality of life for all ages for both genders, and their importance increases even more in extraordinary periods such as pandemic. Sleep problems increasing especially with an accompanying anxiety state may lead to developmental problems as well as deepening psychological disorders.

What's known

- Sleep disorders are common in children. Therefore, early diagnosis and treatment of sleep disorders are extremely important.

What's new

- Sleep problems, which increase with the anxiety that accompanies pandemics, can also deepen psychological disorders. Parents with daughters should be more careful during these periods.

1 | INTRODUCTION

Sleep disorders greatly affecting the quality of life in children are frequently seen. Although it is stated in the literature that sleep disorders are observed from 30% to 50% of children, the percentage of those who can be diagnosed cannot exceed 4%.[1,2] Quality and appropriate sleep are valuable for the growth and development of children. Sleep disorders bring many problems along with them. Therefore, early diagnosis and treatment of sleep disorders, especially in childhood, is crucial.[1,3-5]

Family physicians, who are responsible for providing primary health care services, play a major role in defining sleep disorders for the childhood age group.[6] They make the initial assessment of sleep disorders through physical examination, laboratory tests, and scales. They direct other diagnostic tests (polysomnography, etc) to the upper step.[7]

Another factor affecting the quality of life, growth, and development of children is nutrition. Because of the insufficient nutrition in children, irreversible health problems are seen in many countries. Not only the physical but also the emotional and social development of children is directly related to nutrition.[8]

Changes in sleep and diet can be observed during periods of behavioral change, and during the COVID-19 pandemic period. It is expected that sleep and nutrition, which are important behaviors for the development of children, will also be influential because of behavioral changes. The aim of our study is to evaluate the possible changes in sleep disorders and nutrition in children during the pandemic.

2 | MATERIAL AND METHODS

2.1 | Study participants and design

Our study was a questionnaire study conducted with observational and analytical methods. Those who referred to our polyclinics from September to December 2020 for any reason and accepted to participate in the study, who were of the age 18 and over and had children between the ages of 6-16 years were included in the study. Verbal and written consent was obtained from those who agreed to participate in the study.

In the first part of the questionnaire, there were a total of nine questions including socio-demographic information and nutritional characteristics, and the second part included the "Sleep Disturbance Scale for Children" (SDSC). Permission to use the scale was obtained from Ağadayı et al,[9] who conducted the study for Turkish validity and reliability of this scale. Patient with positive COVID-19 real-time reverse transcriptase–polymerase chain reaction (RT-PCR) test was defined as a patient positive for COVID-19.

2.2 | Sleep disturbance scale for children

SDSC, developed by Dr Bruni et al in 1996, is a Likert-type scale investigating sleep disorders in children between the ages of 6-16 within the last 6 months.[10] Questions are answered between the statements as "never" (1 point) and "always" (5 points). A minimum score of 26 and a maximum of 130 points can be obtained on the scale. Getting high scores is interpreted in favor of a sleep disorder. T-score tables are available in the original scale in order to provide recommendations. Accordingly, the presence of sleep disorder symptoms is accepted in those with a score above 70.[9,10]

2.3 | Statistical method

Data were analyzed with IBM SPSS V23. Suitability to the normal distribution was examined with Kolmogorov-Smirnov and Shapiro-Wilk. Mann-Whitney U test and Kruskal-Wallis test were used to compare data not showing normal distribution. The relationship between variables was analyzed using Spearman correlation analysis. The data not showing a normal distribution were given as median (minimum-maximum). The level of significance was taken as $P < .05$.

3 | RESULTS

The total number of participants was 114 parents: 64 (56%) of the children were girls and 50 (43.9%) were boys. The number of participants with children who have had COVID-19 was 38. The average age was: 11.32 ± 3.017 (min = 6; max = 16), and the SDSC mean was 40.80 ± 9.139 (min = 27; max = 74). The frequency distributions of the study group, their relations with variables according to COVID-19 status and general variables are shown in Table 1.

There was no statistically significant relationship found between COVID-19 status and the variables examined in general, and the proportion of participants who stated that if the pandemic period prolonged and COVID-19 would not change their diet were found to be statistically significant (Table 1).

SDSC score distributions do not show statistically significant variation according to the factors examined except gender. It was found to be significantly higher in girls ($P < .05$) (Table 2). When we examine the relationship between age and the SDSC score, no significant relationship was found (Table 3).

4 | DISCUSSION

The present study includes sleep and nutrition topics being the two main components for the health of children and quality of life during the COVID-19 pandemic period. In our study, it was found that the nutrition status of children did not show a significant change during the pandemic period. However, sleep disorders were found to be more common in girls.

The COVID-19 pandemic has caused significant changes in the lifestyles of all individuals within the framework of developing economic problems and infection protection measures.[11,12] When evaluated in terms of children, the decrease in collective activities such

TABLE 1 Frequency distributions and relationship states of the variables

	Total	COVID-19 (+)	COVID-19 (-)	
	n (%)	n (%)	n (%)	*P*
Gender				
Girls	64 (56.1)	21 (55.3)	43 (56.6)	.894
Boys	50 (43.9)	17 (44.7)	33 (43.1)	
Nutritional change				
Yes	63 (55.3)	22 (57.9)	41 (53.9)	.689
No	51 (44.7)	16 (42.1)	35 (46.1)	
Change in eating frequency				
No	40 (35.1)	14 (36.8)	26 (34.2)	.178
Yes, it increased	41 (36.0)	17 (44.7)	24 (31.6)	
Yes, it decreased	33 (28.9)	7 (18.4)	26 (34.2)	
Weight change				
No	60 (52.6)	19 (50.0)	41 (53.9)	.290
Gained 1-5 kilograms	47 (41.2)	17 (44.7)	30 (39.5)	
Gained 5-10 kilograms	3 (2.6)	2 (5.3)	1 (1.3)	
Lost 1-5 kilograms	4 (3.5)	0 (0)	4 (5.3)	
Applications for protection				
More fruits	27 (23.7)	9 (23.7)	18 (23.7)	.064
Vitamin drugs	23 (20.2)	2 (5.3)	21 (27.6)	
More feeding	26 (22.8)	11 (28.9)	15 (19.7)	
Recommended dietary supplements	17 (14.9)	8 (21.1)	9 (11.8)	
No	21 (18.4)	8 (21.1)	13 (17.1)	
Nutrition change if the pandemic prolongs				
Yes	40 (35.1)	12 (31.6)	28 (36.8)	**.038**[a]
No	34 (29.8)	17 (44.7)	17 (22.4)	
Partially	40 (35.1)	9 (23.7)	31 (40.8)	
SDSC points				
70>	111 (97.4)	37 (97.4)	74 (97.4)	.000
70≤	3 (2.6)	1 (2.6)	2 (2.6)	

Bolded values are statistically significant.
[a]The chi-square test.

TABLE 2 SDSC point distributions and their relationship with the variables

	SDSC points			
	Median (min; max)	IQR	Mean (±SD)	*P*
Gender				
Girls	43 (27; 74)	11	40.27 (9.13)	**.037**[a]
Boys	39 (27; 59)	12	43.95 (10.61)	
Nutritional change				
Yes	41 (27; 74)	12	42.04 (9.87)	.869
No	41 (27;72)	11	41.73 (10.12)	
Change in eating frequency				
No	42.5 (27; 71)	12	41.98 (9.45)	.766
Yes, it increased	41 (27; 59)	12	42.13 (9.31)	
Yes, it decreased	40 (27; 74)	13	41.55 (11.36)	
Weight change				
No	40 (27; 72)	12	42.18 (10.65)	.133
Gained 1-5 kilograms	43 (27; 74)	11	42.15 (9.26)	
Gained 5-10 kilograms	36 (28; 44)	0	36.00 (8.00)	
Lost 1-5 kilograms	38.5 (33; 40)	6	37.50 (9.95)	
Applications for protection				
More fruits	41 (27; 74)	12	42.13 (10.07)	.674
Vitamin drugs	42 (27; 71)	10	41.69 (9.70)	
More feeding	41 (27; 59)	14	41.03 (8.93)	
Recommended dietary supplements	38 (28; 51)	14	42.04 (10.93)	
No	40 (27; 72)	13	42.74 (10.93)	
Nutrition change if the pandemic prolongs				
Yes	40.5 (27; 74)	13	42.15 (11.09)	.952
No	41 (27; 71)	9	42.00 (9.51)	
Partially	42 (27; 59)	13	41.90 (9.95)	
Going through COVID-19 status				
Yes	40 (27; 71)	10	40.47 (9.09)	.615
No	40.96 (27; 74)	13	42.43 (10.24)	

Abbreviations: IQR, interquartile range; SD, standard deviation.
Bolded values are statistically significant.
[a]Mann-Whitney U test, Kruskal-Wallis test.

as school, park, etc, in normal life groups, and the status of continually staying at home with a parent or a close family member may have affected the children's nutrition, physical activity, and sleep patterns. Staying at home and consuming more food and moving less may result in overweight or obesity in children. In our study, the nutrition and sleep state during this period being the most important determinants of the quality of life of children, one of the most susceptible groups against infection was examined. It was observed that 57.9% of children who went through the COVID-19 infection experienced a change in nutrition, and the majority of those stated that there was a change as an increase in nutrition. Observing the children who did not go through the COVID-19 infection, there was no difference at the rate of children with changes in nutrition (53.9%). Although there was no statistically significant difference, the rate of those who stated that there was a decrease in the frequency of eating in this group of children was higher. It was found that there was no difference between the groups in terms of weight

TABLE 3 The relationship status between Age and SDSC points

	Age	SDSC point
Age		
t	1	0.004
P		.964[a]

[a]Spearman's correlation.

change. When children were evaluated in terms of protection implementation, it was observed that children who did not go through the COVID-19 infection were given more vitamins supplementary. No statistical difference was found between them. It has been observed that if the pandemic prolonged, families did not consider changing their diet of children who went through the COVID-19 infection, and those who did not think of making changes. Nutritional changes may occur during certain periods in children,[11] and the results of our study showed that families who did not go through an infection resorted or would resort to various preventive measures for their children with fear of getting the infection.

In our study, the total average score obtained from the scale in children between the ages of 6-16 was determined as 40.80 + 9.13. Among the studies conducted with the same scale, this score was found to be 40.6 ± 10.1 in the study by Ağadayı et al, as 35.1 ± 7.7 in the original scale study, and as 39.3 ± 7.8 in the study by Huang et al.[8,9,11,12] Our study was conducted during a special period such as the pandemic period; the reason it was found to be slightly higher than the averages given in other studies was considered to be because of the effect of the changes in the general lifestyle of children in this special period. In the Turkish validity and reliability study of the SDSC by Ağadayı et al, sleep disturbances were observed over 70 points in children at a rate of 4%,[9] and in our study, it was calculated over 70 points in 2.6% of children. In addition, the effect of going through the COVID-19 infection on scale scores was evaluated in this study. However, it was seen that it had no effect. In the study, when the children were evaluated in terms of factors that could affect their SDSC scores, it was observed that the SDSC scores of girls were statistically significantly higher than that of boys. In many studies in the literature, it has been stated that sleep disorders are observed more frequently in boys.[13] However, SDSC scores were found to be higher in girls as a result of our study, explaining hormonal changes in the relevant literature[14,15]; the fact that the stress factor may create different results according to gender may also be a result specific to this period. There was no statistical difference between nutritional status and changes made and SDSC scores.

Sleep problems are common for the adolescent age group. Aggression, carelessness and behavioral disorders are caused by sleep problems. Sleep is one of the main points of adolescent development. Adolescents' sleep affects their thinking, behavior and emotional abilities significantly. Similarly, daily activities, individual factors and changes in the environment are also effective on adolescents' sleep patterns. In one study, it was found that more than half of adolescents had low sleep quality, 9% complained of excessive sleepiness, social and family problems, previous sleep disorders, and appetite changes were the main determinants of sleep quality deterioration. Poor sleep quality affects the biopsychosocial health of adolescents, especially the peer-teacher relationship, daytime activity, and negatively affects family interaction in all aspects. It is very important to raise awareness among adolescents about the effect of sleep quality on growth-development and academic success.[16-18] Because of the pandemic, there was not enough participants to make a separate evaluation for the adolescent age group, which is a special group in the age range we evaluated in our study.

5 | CONCLUSION

In order to minimize the losses caused by the difficulties experienced during the COVID-19 Pandemic, attention should be given to sleep and nutrition which have a significant place in the quality of life, for all ages both for girls and boys. The higher frequency of sleep disorders in girls reveals the need for parents to be more attentive to these issues in the present study.

DISCLOSURE

All of the authors declares that they have no conflict of interest concerning the research, authorship or publication of this article.

ETHICAL APPROVAL

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (Permission was obtained from the Ministry of Health General Directorate of Health Services of Turkey—Scientific Research Platform with the form number2020-08-10T16_13_50. Then, approval was obtained from the Hacettepe University Non-Invasive Clinical Research Ethics Committee on 01.09.2020 with the project number GO-20/791 and the decision number 2020/14-29.) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

RESEARCH INVOLVING HUMAN PARTICIPANTS AND/OR ANIMALS

Research involves only human participants.

INFORMED CONSENT

Informed consent was obtained from all individual participants included in the study.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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