THE RELATIONSHIP BETWEEN SLEEP TIME AND OBESITY

E. Z. ALTUN[1], P. BILIR[1], A. T. ERGUR[2]

1. Ankara University Faculty of Medicine, Department of Pediatric Endocrinology, Ankara, Turkey

2. Ufuk University Faculty of Medicine, Department of Pediatric Endocrinology, Ankara, Turkey

ESPE 2021
The 59th Annual Meeting Online
22-26 September 2021

INTRODUCTION

Childhood obesity (CO) is an important risk factor for the development of many chronic metabolic diseases of the adult age. It is a known fact that sleep patterns affect the levels of leptin and ghrelin in the organism. Recent studies with Functional Magnetic Resonance Imaging (fMRI) have shown that insufficient sleep time leads to unhealthy food consumption in the brain.

AIM

The aim of this study is to investigate the association between sleep time in childhood and obesity. In line with this association, the effect of early sleep time on insulin resistance and lipid profile are the first questions that comes to mind. Accordingly, we investigate 'whether sleeping early prevent obesity'.

METHOD

- The study included 115 obese children with a BMI > 95th percentile.
- After detailed history, anthropometric evalution and physical examination in 115 cases who applied to our Pediatric Endocrinology clinic, biochemical (fasting serum glucose, lipid profile) and hormon panels (fasting insulin) were searched.
- Clinical assesments included insulin resistance measured by HOMA-IR ([Fasting blood glucose (mmol/L) x serum fasting insulin (mIU/L)] / 22.5). Also we measured the triglyceride and HDL levels of each patients.
- Moreover, we divided our cases into two groups as sleepers between 21:00-21:30 and later sleepers.

RESULTS

- The mean weight and BMI SDS were 72.31 kg and 2.98, respectively, and the mean triglyceride and HDL levels of those who slept between 21:00 and 21:30 were 84.13 mg / dl and 49.67 mg / dl, respectively.
- Moreover, the mean triglyceride and HDL values of the patients who slept after 21:30 were 106.31 mg / dl and and 44.34 mg / dl, respectively. Accordingly, the TG levels of patients who slept between 21:00-21:30 were lower than those who slept later (p = 0.067).
- In contrast, HDL levels of patients who slept between 21:00-21:30 were significantly higher than those who slept later (p = 0.019). While the average HOMA-IR index of sleepers between 21:00-21:30 was 4.78, the average HOMA-IR index of late sleepers was 5.21 (p = 0.527).
- The analysis shows that patients who sleep earlier (21: 00-21: 30) have lower HOMA-IR index and lower triglycerides and higher HDL levels. The results further show that early sleep reduces insulin resistance and prevents dyslipidemia.

Table 1. Anthropometric and evaluation of the cases

	Mean	Std. Dev.	Min	Max
Age	13.52	2.21	9.94	18
Weight (kg)	72.31	16.66	40.8	137.4
Height (cm)	158.45	9.33	135	186
Height SDS	0.46	1.05	-2.45	3.6
BMI (kg/m²)	28.48	4.27	22.12	47.66
BMI %	97.07	2.97	87.08	99.99
BMI z score	2.98	0.94	2.02	5.69
RBMI	141.27	17.53	120.05	217.85

Table 2. The levels of triglycerides, high density lipoprotein, FBG, and FBI

	Mean± Std. Dev.	Min	Max
Fasting blood glucose (mg/dl)	86.41 ± 7.13	72	105
Serum fasting insulin (mIU/ml)	23.58 ± 10.70	8.5	74.1
HDL (mg/dl)	45.03 ± 8.24	27	66
TG (mg/dl)	103.42 ± 43.75	40	263

Table 3. The association between sleep time, triglycerides, high density lipoprotein, and Homa-IR

	TG (mg/dl)			HDL (mg/dl)			Homa-IR		
Sleep time	Mean	Std. Dev.	P-value	Mean	Std. Dev.	P-value	Mean	Std. Dev.	P-value
21:00 – 21:30	84.13	39.41		49.67	10.36		4.78	2.55	
After 21:30	106.31	43.82	0.067	44.34	7.7	0.019	5.21	2.49	0.527

CONCLUSIONS

- In this study, we show that early sleeping reduces insulin resistance and prevents dyslipidemia.
- Demonstrating this mechanism thereby may be the target of future studies.

REFERENCES

1. Cappuccio FP, Taggart FM, Kandala N-B, Currie A, Peile E, Stranges S, et al. Meta-analysis of short sleep duration and obesity in children and adults. Sleep. 2008;31(5):619

CONTACT INFORMATION

ekinzeynepaltun@gmail.com
aycaergur@superonline.com
bilirpelin@yahoo.com