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Letter to the Editor

Adherence to the Mediterranean Diet in Relation to Obesity Indices before and after a Weight Reduction Program in OSAS Patients

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Dear Editor-in-Chief

Obesity is considered as the most important risk factor for obstructive sleep apnea syndrome (OSAS). It has been estimated that 60-90% of all patients with OSAS are obese (1) and that weight reduction is a very effective modality in these patients. The role of the adherence to Mediterranean diet (MD) in the primary prevention of obesity has been reported (2). The greater adherence to the MD could play a role in the prevention of OSAS via an effect on obesity indices. Considering this, the present study aimed to examine the association of MD with obesity indices before and after a weight reduction program in OSAS patients.

Forty obese patients composed the sample. The sampling method, intervention procedure and measurements are fully described elsewhere (3). In brief, two groups of patients with moderate to severe OSAS were formed. In both groups, the patients received continuous positive airway pressure (CPAP) therapy and weight reduction programs (MD vs prudent diet). The two groups were combined into one in order to increase the sample size and to get a wider range of the Mediterranean Diet Score (MedDietScore) values which would make more interesting the analysis. A paired sample t-test was performed to test the changes in the above measurements. Multiple linear regressions with backward selection was performed with MedDietScore as the dependent variable and age, gender, educational level, smoking, physical activity, obesity and OSAS severity indices as the initial independent variables set at baseline and end of the intervention. A *P*-value less than 0.05 was considered significant. Of the initial sample, 80% remained obese and the rest overweight after 6 months (Table 1). Multiple linear regression analysis after 6 months showed that MedDietScore was independently associated with BMI (*P*: 0.03, 95%CI: -1.40 to -0.32, beta = -0.45), while no associations were revealed between this score and obesity indices at baseline.

Potential mechanisms linking increased MD adherence to protection against obesity development may include its lower energy density and its relatively low glycemic load. These beneficial factors, along with its higher fiber and water content, lead to increased satiation and lower calorie intakes. Moreover, the MD is highly palatable, which can increase both tolerance and compliance among individuals following it (4). The absence of any significant association between the MedDietScore and obesity indices at baseline and the reveal of the aforementioned association at the end of the

intervention could be explained by that after the implementation of the program only the subjects belonging to the MD group managed to increase this score substantially (MedDieScore mean change: from 28.9 to 41.6) while the other group showed a slight increase (MedDieScore mean change: from 28.1 to 29.5) (3). This may have increased the possibility to detect the aforementioned association. The notable improvement in OSAS severity could be attributed to the change in BMI and body circumference indices (5). Regarding the possible effect of CPAP treatment on OSAS, research has not shown greater weight loss or OSAS severity improvement after a combination of a weight reduction program with CPAP treatment during the first 6 months compared to that without CPAP (6). Therefore, CPAP may have not affected our findings.

In conclusion, the greater adherence to the MD may influence BMI in patients with OSAS and its promotion may help reduce the prevalence of obesity and subsequently OSAS.

Table 1: Demographic/anthropometric/polysomnographic characteristics and Mediterranean Diet Score of the subjects (n=40) at entry to study and after 6 months

	Baseline	After 6 months	*P*-value*
Gender (male/female)	34:6	34:6	
Age (years)	52.2 ± 10.5	52.2 ± 10.5	
Educational level	2.5 ± 1.2	2.5 ± 1.2	
Mediterranean Diet Score	28.5 ± 4.1	35.3 ± 8.1	<0.001
Metabolic equivalent task (min/week)	1424.1 ± 1375.3	1760.1 ± 1532.5	0.116
Body mass index (kg/m^2)	36.6 ± 4.3	33.8 ± 4.3	<0.001
Waist circumference (cm)	117.4 ± 12.1	110.2 ± 11.5	<0.001
Waist circumference/height ratio (cm/m)	0.68 ± 0.06	0.64 ± 0.06	<0.001
Waist circumference/hip ratio (cm/cm)	0.99 ± 0.07	0.96 ± 0.06	<0.001
Neck circumference (cm)	43.9 ± 4.2	42.3 ± 4.1	<0.001
Apnoea-hypopnoea index (events/h)	55.5 ± 33.6	45.5 ± 29.9	<0.001
Apnoea-hypopnoea index/rapid eye movement (events/h)	62.2 ± 31.9	53.4 ± 30.2	0.004
Arousal index (events/h)	54.3 ± 20.2	43.7 ± 18.7	0.006
Desaturations per hour (events/h)	53.1 ± 31.6	40.7 ± 29.1	<0.001
Mean oxygen saturation	92.1 ± 2.8	93.2 ± 2.1	<0.001
Lowest oxygen saturation	77.8 ± 7.6	81.4 ± 6.9	<0.001

*Paired samples *t*-test. All data were analyzed with the Statistical Package for Social Sciences (SPSS) version 18.0

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References

1. Pillar G, Shehadeh N (2008). Abdominal fat and sleep apnea: the chicken or the egg? *Diabetes Care,* 2: 303-9.
2. Panagiotakos DB, Chrysohoou C, Pitsavos C, Stefanadis C (2006). Association between the prevalence of obesity and adherence to the Mediterranean diet: the ATTICA study. *Nutrition,* 22: 449-56.
3. Papandreou C, Schiza SE, Bouloukaki I, Hatzis CM, Kafatos AG, Siafakas NM, et al (2012). Effect of Mediterranean diet versus prudent diet combined with physical activity on OSAS: a randomised trial. *Eur Respir J,* 39: 1398-404.
4. Schroder H (2007). Protective mechanisms of the Mediterranean diet in obesity and type 2 diabetes. *J Nutr Biochem,* 18: 149-60.
5. Romero-Corral A, Caples SM, Lopez-Jimenez F, Somers VK (2010). Interactions between obesity and obstructive sleep apnea: implications for treatment. *Chest*, 137(3): 711-9.
6. Kajaste S, Brander PE, Telakivi T, Partinen M, Mustajoki P (2004). A cognitive-behavioral weight reduction program in the treatment of obstructive sleep apnea syndrome with or without initial nasal CPAP: a randomized study. *Sleep Med,* 5: 125-31.