

# Diet as a Risk Factor in Obstructive Sleep Apnea

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## Introduction

Obstructive sleep apnea (OSA) is a common disease affecting approximately 2% of women and 4% of men. It is independently associated with cardiovascular disease and metabolic syndrome. Established risk factors for OSA include obesity, male gender, post-menopausal state, smoking and increased neck circumference. Sleep deprivation, a common occurrence in OSA, is associated with weight gain and cravings for carbohydrates. Preference for fatty foods has been documented in sleep deprivation. Studies using mouse models have suggested that high fats diets increase the severity of sleep apnea independent of BMI (body mass index). We hypothesized that dietary habits, especially increased fatty food intake, are independently associated with severity of OSA.

## Methods

In this study, we identified 104 patients with a new diagnosis of obstructive sleep apnea who presented to the George Washington-Medical Faculty Associates Center for Sleep Disorders. All patients who had begun CPAP were excluded from this study in order to eliminate any confounding factors associated with treatment. Overall, the patients selected for this study, were between 23-80 years of age with approximately 45% African Americans, 45% Caucasian, 3% Hispanic, and 6% Asian participants. Following selection, the participants completed a validated diet survey known as the Rapid Eating Assessment for Patients (REAP). The apnea-hypopnea index (AHI) was used as a measure of the severity of obstructive sleep apnea. Subjects were divided using BMI into obese (BMI > 30 kg/m<sup>2</sup>) and overweight (BMI > 25 but < 30 kg/m<sup>2</sup>) categories. Regression analysis was performed to relate severity of OSA to gender, BMI, age, % energy from fat, and the individual dietary components of REAP

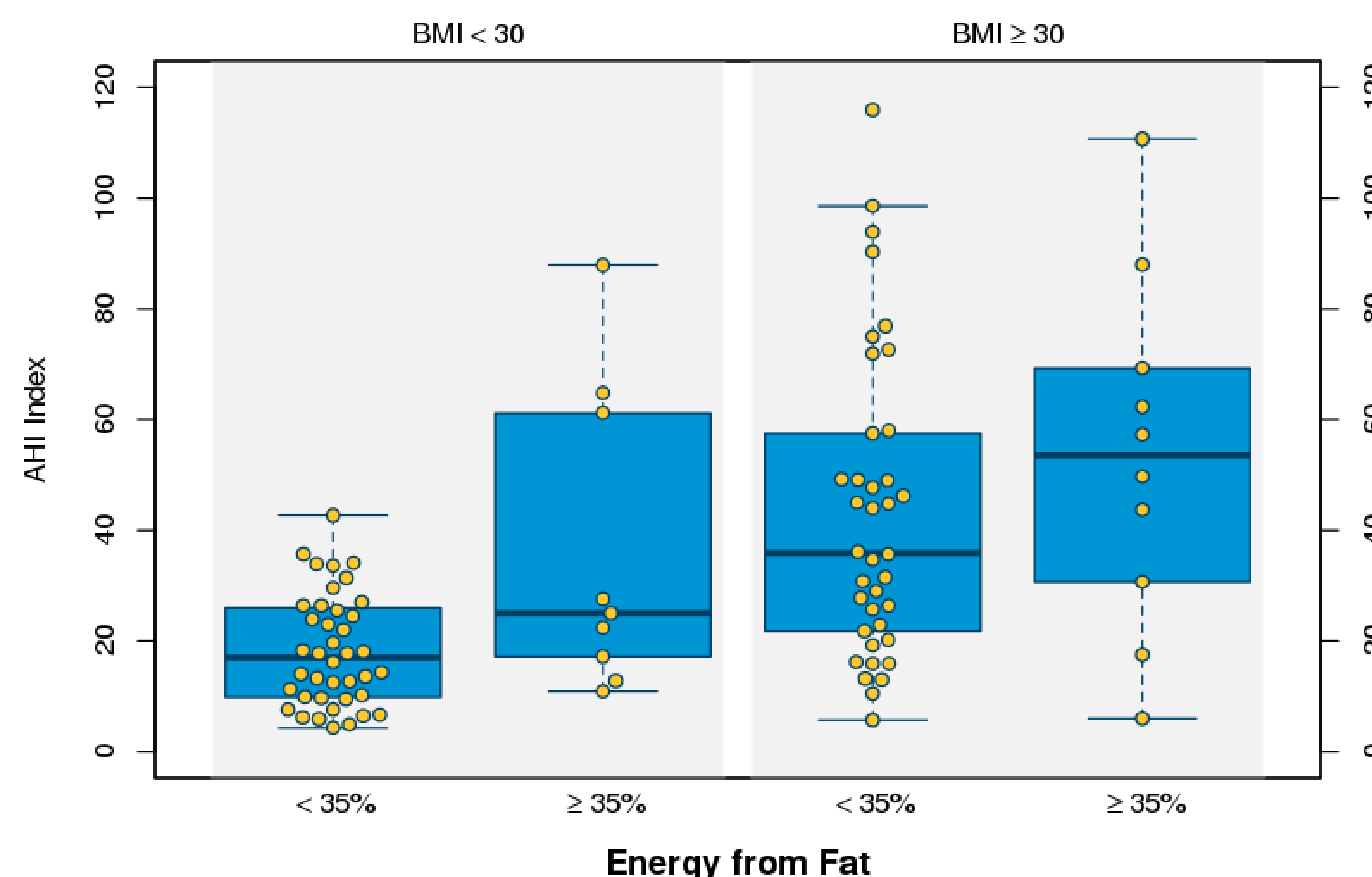


Fig 1. Energy consumed from fat compared to sleep apnea severity (AHI).

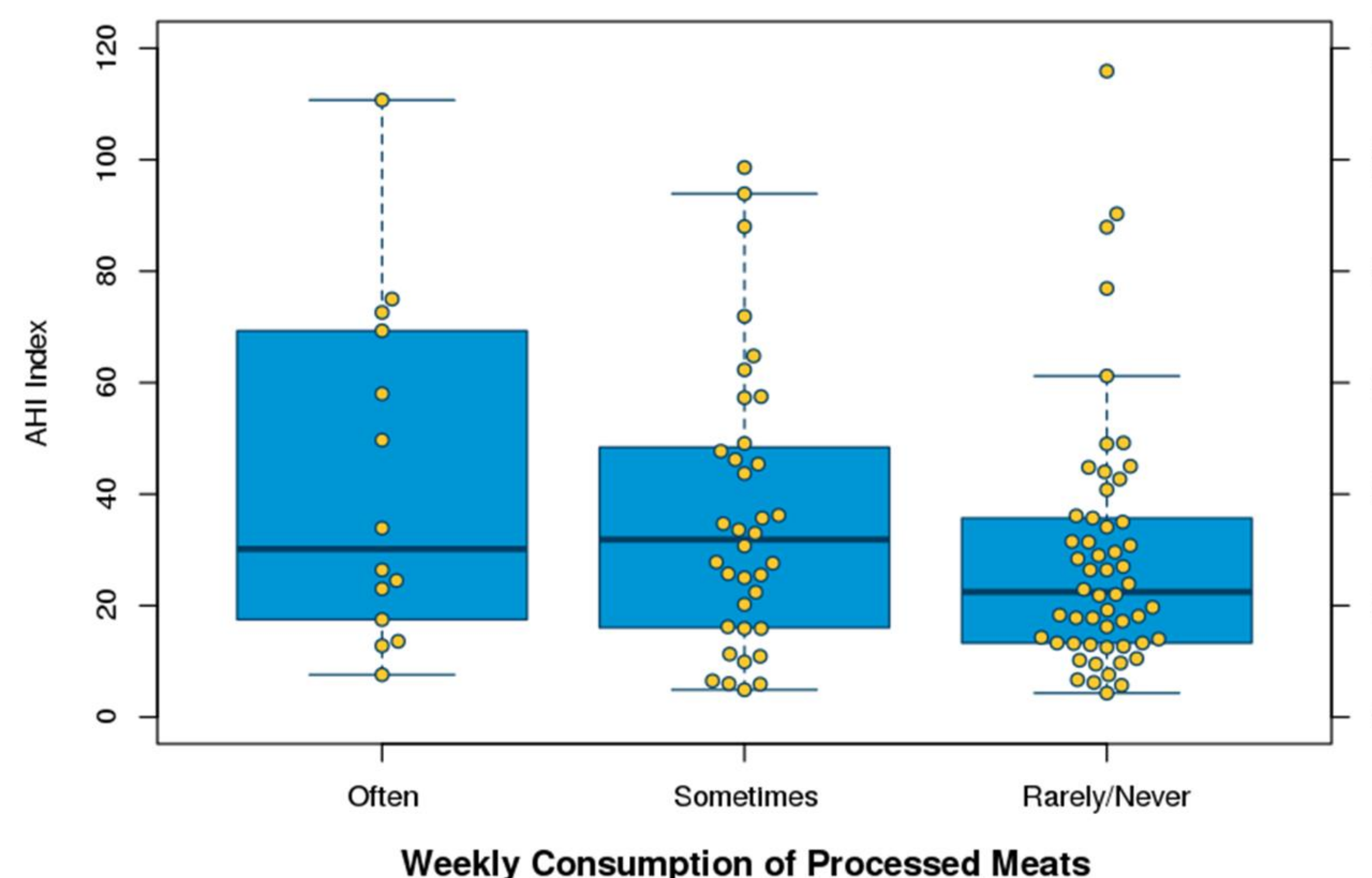


Fig 2. Consumption of processed meats compared to sleep apnea severity (AHI)

## Results

Subjects with a BMI <30 who consumed a diet high in fat (>35% of their total diet) had twice the severity of sleep apnea (AHI  $18.2 \pm 10.1$  vs.  $36.6 \pm 27.5$ ;  $p = 0.001$ ). There was a statistically significant difference ( $p = 0.04$ ) in OSA severity between subjects eating processed meats “often” [AHI  $42.5 \pm 30.7$ ] versus those eating “rarely/never” [AHI  $28.9 \pm 22.7$ ], even after adjusting for BMI. Conversely, eating greater than 2 servings of dairy per day conferred protection against sleep apnea [AHI  $26.2 \pm 15.6$  vs.  $39.7 \pm 31$ ;  $p = 0.04$ ].

## Conclusions

Dietary components may confer increased risk for worsening severity of OSA. Based on these findings, unhealthy dietary patterns warrant further study of their role in OSA associated cardiovascular diseases and metabolic syndrome development.

## References

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