

# European Respiratory Society Annual Congress 2012

**Abstract Number:** 2613

**Publication Number:** P1887

**Abstract Group:** 4.2. Sleep and Control of Breathing

**Keyword 1:** Longitudinal study **Keyword 2:** Sleep studies **Keyword 3:** No keyword

**Title:** Sleep duration and obesity in women – A 10 year prospective study

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**Body:** Background: Obesity is highly related to obstructive sleep apnea syndrome. Research has shown that one potential cause of obesity may be short sleep duration. Aim: The aim was to assess how sleep duration and obesity is related over a 10 year period, in a population-based sample of women. Methods: A total of 5,003 non-pregnant women (response rate 80 %)  $\geq 30$  years, answered a 10-year follow-up questionnaire. The questionnaire included questions on sleep duration, weight, height, waist circumference, snoring and life style factors. Regression analysis was performed to analyze independent associations between sleep duration and measures of obesity. Results: In the whole population 31% (n=2,127) of the women had increased their weight by at least 15 kg, 37% (n=2,549) had a BMI  $\geq 30$  kg/m<sup>2</sup> and 52% were centrally obese (waist circumference  $\geq 88$ cm). Both short (<6h) (OR=1.38; 95%CI 1.06-1.80) and long sleep duration ( $\geq 9$ h) (1.86; 1.32-2.62) showed to be risk factors for general obesity (BMI  $\geq 30$  kg/m<sup>2</sup>) after controlling for confounders. When dividing the women by age both short and long sleep duration were risk factors in the younger age group (age at baseline <40 years). In women above age 40 years at baseline only long sleep duration remained as a risk factor for general obesity after controlling for confounders. In addition, short sleep duration was shown as a risk factor for central obesity after adjustments (1.46; 1.002-2.14) in younger women, whereas long sleep duration was a risk factor in women age  $\geq 40$  years (1.86; 1.17-2.96). Conclusion: Both short and long sleeping women had a greater risk of general obesity compared with normal sleepers (6-9h). Young short sleepers were also more at risk for central obesity.