**Sleep duration is an independent determinant of metabolic impairment in COPD patients**

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**Background:** Metabolic impairment is extremely common in people with chronic obstructive pulmonary disease (COPD), in whom it is associated with worse lung function, increased morbidity and mortality.

**Aims:** The aim of this study was to determine the effect of night and daytime sleep duration on metabolic impairment in COPD patients.

**Patients and methods:** People with stable COPD were recruited. Oral glucose tolerance test was used to measure fasting and postprandial (120 mins) glucose, fasting insulin and insulin resistance (HOMA2IR). Fasting lipid profile and waist circumference were also measured. Actigraphy was performed over 8 days, with the middle 6 whole days used for analysis. Sleep was defined by algorithm and measured in 1 minute epochs overnight (22:00-06:00) and day (06:01-21:59) periods. Daily step count was used to estimate physical activity.

**Results:** 52 COPD patients (71±8 years, FEV1 56±19% predicted, 56% metabolic syndrome) slept for 4.6±1.5 hours at night and 2.1±1.3 hours during the day. After adjustment for age, body mass index (BMI) and daily step count, night time sleep duration was an independent determinant of postprandial glucose (partial eta squared (ηp2)=0.128, p=0.012), HOMA2IR (ηp2=0.092, p=0.034) and lipid profile. Day time sleep duration was an independent determinant of fasting glucose (ηp2=0.099, p=0.027) and HOMA2IR (ηp2=0.084, p=0.043).

**Conclusion:** Reduced night time sleep duration and increased day time sleep duration are associated with metabolic impairment in COPD patients, independent of age, BMI and physical activity. Interventions to improve sleep in COPD patients have potential to improve metabolism.