

Long-term cardiovascular outcomes in men with obstructive sleep apnoea-hypopnoea with or without treatment with continuous positive airway pressure: an.

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## Long-term cardiovascular outcomes in men with obstructive sleep apnoea-hypopnoea with or without treatment with continuous positive airway pressure: an observational study

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### Summary

#### Background

The effect of obstructive sleep apnoea-hypopnoea as a cardiovascular risk factor and the potential protective effect of its treatment with continuous positive airway pressure (CPAP) is unclear. We did an observational study to compare incidence of fatal and non-fatal cardiovascular events in simple snorers, patients with untreated obstructive sleep apnoea-hypopnoea, patients treated with CPAP, and healthy men recruited from the general population.

## Methods

We recruited men with obstructive sleep apnoea-hypopnoea or simple snorers from a sleep clinic, and a population-based sample of healthy men, matched for age and body-mass index with the patients with untreated severe obstructive sleep apnoea-hypopnoea. The presence and severity of the disorder was determined with full polysomnography, and the apnoea-hypopnoea index (AHI) was calculated as the average number of apnoeas and hypopnoeas per hour of sleep. Participants were followed-up at least once per year for a mean of  $10\hat{\cdot}1$  years (SD  $1\hat{\cdot}6$ ) and CPAP compliance was checked with the built-in meter. Endpoints were fatal cardiovascular events (death from myocardial infarction or stroke) and non-fatal cardiovascular events (non-fatal myocardial infarction, non-fatal stroke, coronary artery bypass surgery, and percutaneous transluminal coronary angiography).

## Findings

264 healthy men, 377 simple snorers, 403 with untreated mild-moderate obstructive sleep apnoea-hypopnoea, 235 with untreated severe disease, and 372 with the disease and treated with CPAP were included in the analysis. Patients with untreated severe disease had a higher incidence of fatal cardiovascular events ( $1\hat{\cdot}06$  per 100 person-years) and non-fatal cardiovascular events ( $2\hat{\cdot}13$  per 100 person-years) than did untreated patients with mild-moderate disease ( $0\hat{\cdot}55$ ,  $p=0\hat{\cdot}02$  and  $0\hat{\cdot}89$ ,  $p<0\hat{\cdot}0001$ ), simple snorers ( $0\hat{\cdot}34$ ,  $p=0\hat{\cdot}0006$  and  $0\hat{\cdot}58$ ,  $p<0\hat{\cdot}0001$ ), patients treated with CPAP ( $0\hat{\cdot}35$ ,  $p=0\hat{\cdot}0008$  and  $0\hat{\cdot}64$ ,  $p<0\hat{\cdot}0001$ ), and healthy participants ( $0\hat{\cdot}3$ ,  $p=0\hat{\cdot}0012$  and  $0\hat{\cdot}45$ ,  $p<0\hat{\cdot}0001$ ). Multivariate analysis, adjusted for potential confounders, showed that untreated severe obstructive sleep apnoea-hypopnoea significantly increased the risk of fatal (odds ratio  $2\hat{\cdot}87$ , 95%CI  $1\hat{\cdot}17\hat{\text{--}}7\hat{\cdot}51$ ) and non-fatal ( $3\hat{\cdot}17$ ,  $1\hat{\cdot}12\hat{\text{--}}7\hat{\cdot}51$ ) cardiovascular events compared with healthy participants.

## Interpretation

In men, severe obstructive sleep apnoea-hypopnoea significantly increases the risk of fatal and non-fatal cardiovascular events. CPAP treatment reduces this risk.



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