

# Relationship between sleep duration and cardiovascular disease: a meta-analysis

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# Declaration of interest

- I have nothing to declare

# Background



- Average adult spends 1/3 of his life sleeping
- Sleep disorders affect nearly 1/10 adults
- Several pathophysiological changes are related to sleep deprivation
  - Sympathetic Nervous System activation
  - Disturbance of glucose metabolism
  - Decreased levels of plasma NO
  - Inflammation
- Previous conflicting meta-analyses<sub>1,2</sub>

1 Cappuccio et al 2011, European Heart Journal

2 Holliday et al 2013 , PLOS One

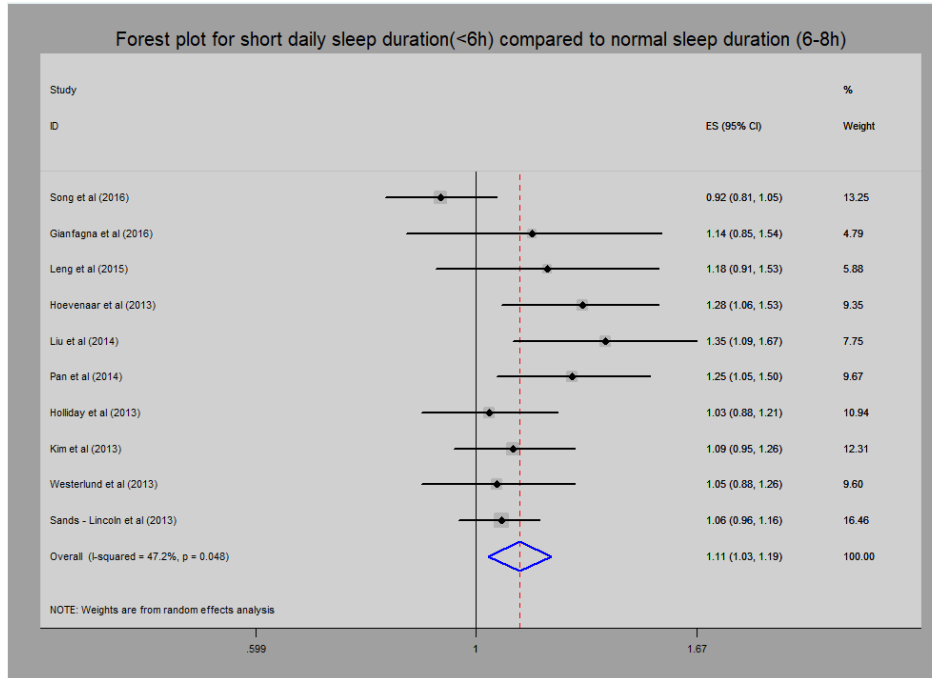
# Purpose and key points about methods

- **Purpose:** Investigate the relationship between daily sleep duration and morbidity/mortality from Cardiovascular Disease through a meta-analysis
- **Exposure:** Daily sleep duration measured by self-reporting forms (normal values 6-8 hours). Three groups:
  - Normal sleep duration (6-8h)
  - Short sleep duration (<6h)
  - Long sleep duration (>8h)
- **Population:** Adults without known cardiovascular disease
- **Outcome:** Diagnosis and/or death from cardiovascular disease measured as hazard ratio (HR) by Cox Models
- **Systematic Literature Search:** Prospective studies of last 5 years to avoid recall bias and have an updated view of current sleep patterns
- **Adjustments:** Every study included adjustments for all known CVD risk factors

# Results

- 11 studies included (N=1,000,541)
- 9 countries
- Average follow-up period: 9.3 years
- Two comparisons:
  - Normal sleep duration vs. Short sleep duration
  - Normal sleep duration vs. Long sleep duration

# Results



## Short Sleep Duration

Random Effects Model

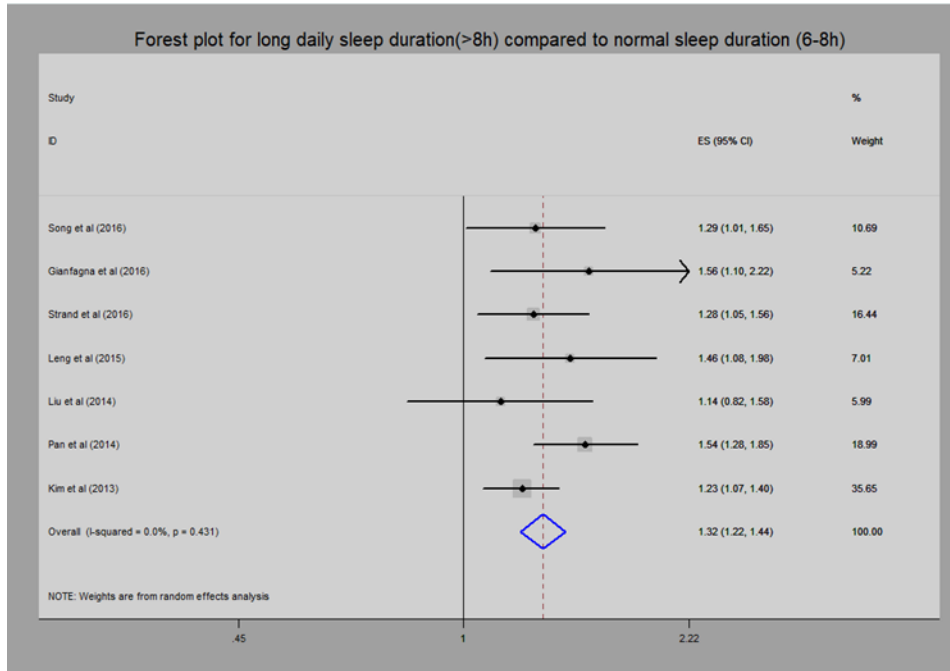
**RR=1.11**

95% CI:1.03-1.19

**P-value=0.007**

Moderate Heterogeneity

# Results



## Long Sleep Duration

Fixed Effects Model

**RR=1.32**

95%CI 1.22-1.43

**P-value<0.001**

No Heterogeneity observed

# Conclusions

**Short (less than 6 hours) and Long (more than 8 hours) sleepers have 11% and 33% greater risks, respectively, of developing or dying from coronary artery disease or stroke compared to normal sleepers (6-8 hours)**



# Key messages

## **To Physicians**

Consultation for proper sleep duration to achieve better results in primary prevention of stroke and coronary heart disease

## **To Patients**

Sleep well , not too long , nor too short

Thank you!

