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

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

$RR=1.11$

$95\% \text{ CI:} 1.03-1.19$

$P$-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!