

Title: Sleep duration predicts cardiovascular outcomes: a systematic review and meta-analysis of prospective studies

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Abstract:

Aims. To assess the relationship between duration of sleep and morbidity and mortality from coronary heart disease (CHD), stroke, and total cardiovascular disease (CVD).

Methods and results. We performed a systematic search of publications using MEDLINE (1966–2009), EMBASE (from 1980), the Cochrane Library, and manual searches without language restrictions. Studies were included if they were prospective, follow-up >3 years, had duration of sleep at baseline, and incident cases of CHD, stroke, or CVD. Relative risks (RR) and 95% confidence interval (CI) were pooled using a random-effect model. Overall, 15 studies (24 cohort samples) included 474 684 male and female participants (follow-up 6.9–25 years), and 16 067 events (4169 for CHD, 3478 for stroke, and 8420 for total CVD). Sleep duration was assessed by questionnaire and incident cases through certification and event registers. Short duration of sleep was associated with a greater risk of developing or dying of CHD (RR 1.48, 95% CI 1.22–1.80, $P < 0.0001$), stroke (1.15, 1.00–1.31, $P = 0.047$), but not total CVD (1.03, 0.93–1.15, $P = 0.52$) with no evidence of publication bias ($P = 0.95$, $P = 0.30$, and $P = 0.46$, respectively). Long duration of sleep was also associated with a greater risk of CHD (1.38, 1.15–1.66, $P = 0.0005$), stroke (1.65, 1.45–1.87, $P < 0.0001$), and total CVD (1.41, 1.19–1.68, $P < 0.0001$) with no evidence of publication bias ($P = 0.92$, $P = 0.96$, and $P = 0.79$, respectively).

Conclusion. Both short and long duration of sleep are predictors, or markers, of cardiovascular outcomes

