Abstract:

Background. Increasing evidence suggests an association between both short and long duration of habitual sleep with adverse health outcomes.

Objectives. To assess whether the population longitudinal evidence supports the presence of a relationship between duration of sleep and all-cause mortality, to investigate both short and long sleep duration and to obtain an estimate of the risk.

Methods. We performed a systematic search of publications using MEDLINE (1966-2009), EMBASE (from 1980), the Cochrane Library, and manual searches without language restrictions. We included studies if they were prospective, had follow-up >3 years, had duration of sleep at baseline, and all-cause mortality prospectively. We extracted relative risks (RR) and 95% confidence intervals (CI) and pooled them using a random effect model. We carried out sensitivity analyses and assessed heterogeneity and publication bias.

Results. Overall, the 16 studies analyzed provided 27 independent cohort samples. They included 1,382,999 male and female participants (follow-up range 4 to 25 years), and 112,566 deaths. Sleep duration was assessed by questionnaire and outcome through death certification. In the pooled analysis, short duration of sleep was associated with a greater risk of death (RR: 1.12; 95% CI 1.06 to 1.18; P < 0. 01) with no evidence of publication bias (P = 0.74) but heterogeneity between studies (P = 0.02). Long duration of sleep was also associated with a greater risk of death (1.30; [1.22 to 1.38]; P < 0.0001) with no evidence of publication bias (P = 0.18) but significant heterogeneity between studies (P < 0.0001).

Conclusion. Both short and long duration of sleep are significant predictors of death in prospective population studies.

Figure 2—Forest plot of the risk of death associated with short duration of sleep compared to the reference group in 25 population cohorts from 15 published prospective studies including 1,381,324 participants and 112,163 events. Results are expressed as relative risk (RR) and 95% confidence intervals (95% CI). Pooled analysis P < 0.01; heterogeneity test: I² = 39%, P = 0.02