Reviewer’s report

Title: Sleep duration and incidence of lung cancer in ageing men

Version: 2  Date: 1 February 2014

Reviewer: Anne Grundy

Reviewer’s report:

This paper presents an interesting analysis of associations between sleep duration and lung cancer in a cohort of older men from Finland. Strengths of the study include the reasonably large sample size and that the design was prospective such that sleep duration was measured prior to lung cancer development, reducing the risk of cancer-associated changes in sleep impacting on reported sleep duration. The authors also include a number of potential confounders in their analysis that might alter sleep – lung cancer relationships.

Major Compulsory Revisions:

1) In the section on characterization of sleep duration in the methods on p. 5 the authors indicate that crude lung cancer ‘ratios’ were lowest in the 7h group and thus this was chosen as the referent for further associations between sleep duration and lung cancer. This choice is concerning as using the rate of the outcome in question (lung cancer) to determine how the exposure (sleep) will be categorized seems quite susceptible to potentially biasing the results to find an association with lung cancer. How sensitive are the presented findings to alternate categorizations on sleep duration (as these categories should be determined a priori)? Further, was there a difference in risk between individuals sleeping 8/8.5h compared to longer sleep durations (9/9.5/10h)? The choices of sleep duration categories require further consideration in order for the findings presented in the manuscript to be more convincing.

2) The authors present associations between sleep duration and lung cancer among smokers, as well as the full population (including smokers and non-smokers). Was a similar analysis among non-smokers conducted as well? Presenting this comparison would be useful in evaluating potential effect modification of the relationship between sleep and lung cancer by smoking. Specifically, is the association between sleep and lung cancer only seen in smokers? Are the effects of differing magnitude?

Minor Essential Revisions:

1) In the same section as comment 1 in the major revision section, the authors refer to crude lung cancer ‘ratios’ in the 7h sleep group but present rates in brackets. The terminology around what was calculated here needs to be clarified.

2) In paragraph 2 of the background section (p. 3) the authors refer to observations of severe disruptions of circadian rhythms in lung cancer patients. Is there a citation for this? It was not clear from the current version of the
manuscript what the source of these observations was.

3) In the discussion at the end of the top paragraph on p. 10 the authors suggest that one oncstatic property of melatonin is in prevention of chronodisruption. This is misleading as melatonin does not prevent against chronodisruption, the alteration of natural circadian rhythms. Rather, altered melatonin secretion patterns (ie. timing, amount, duration of secretion) can be measured to characterize whether chronodisruption has occurred. This needs to be clarified in the text.

4) In the second paragraph on p. 10 the authors indicate that chronodisruption increases risk for breast, endometrial, prostate and colon cancer. However, most of the studies referred to here were of shift work and cancer risk, where chronodisruption is a hypothesized mechanism to explain observed associations. As in comment 3, the language here needs to be clarified to reflect this distinction.

5) In table 3 the authors present a number of different models, including different sets of potential confounders. Which of these do the authors believe is the most valid, as there is not a consistent pattern of changes in odds ratios as additional variables are added to the model. Do the authors believe all potential confounders are true confounders of sleep-lung cancer associations?

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.