

of sleep and cardiovascular morbidity and mortality may be explained by residual confounding and co-morbidities^{38–40}. In particular, depressive symptoms, low socio-economic status, unemployment, low level of physical activity, and undiagnosed health conditions have all been shown to be associated with long duration of sleep and to confound the association with morbidity and mortality.^{38,40} It is conceivable that the associations between long duration of sleep and the different cardiovascular outcomes may reflect the role of long sleep as a marker, rather than as a cause, of these chronic conditions.¹¹ A recent intervention study of weight reduction, healthy diet, and increased physical activity showed, compared with a control group, a significant reduction in the 7-year incidence of type-2 diabetes among long sleepers,⁴¹ supporting the view that long sleep may be an indicator of risk, reversible upon changes in the risk factors.

Conclusions

Currently, there is no evidence that sleeping habitually between 6 and 8 h per day in an adult is associated with harm and long-term health consequences. However, sleeping 9 h or more per night may represent a useful diagnostic tool for detecting subclinical or undiagnosed co-morbidity. People reporting consistently sleeping 5 h or less per night should be regarded as a higher risk group for cardiovascular morbidity and mortality.

Authors' contribution

F.P.C. and M.A.M. conceived the study aims and design, contributed to the systematic review and data extraction, performed the analysis and interpreted the results. F.P.C. drafted the manuscript. D.C., L.D., and P.S. contributed to the data extraction, interpretation of results, and to the revision of the manuscript.

Supplementary material

Supplementary material is available at *European Heart Journal* online.

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