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**The contribution of sleep to social inequalities in cardiometabolic disorders: a multi cohort study**

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#### **ABSTRACT**

AIMS - Sleep disturbances exhibit a strong social patterning, and inadequate sleep has been associated with adverse health outcomes, including cardiovascular disorders (CVD). However, the contribution of sleep to socioeconomic inequalities in CVD is unclear. This study pools data from eight European cohorts to investigate the role of sleep duration in the association between life-course socioeconomic status (SES) and CVD. METHODS AND RESULTS - We used cross-sectional data from eight European cohorts, totalling 111 205 participants. Life-course SES was assessed using father's and adult occupational position. Self-reported sleep duration was categorized into recommended (6–8.5 h/night), long (>8.5 h/night), and short (<6 h/night). We examined two cardiovascular outcomes: coronary heart disease (CHD) and stroke. Main analyses were conducted using pooled data and examined the association between life-course SES and CVD, and the contribution of sleep duration to this gradient using counterfactual mediation. Low father's occupational position was associated with an increased risk of CHD (men: OR = 1.19, 95% CI [1.04; 1.37]; women: OR = 1.25, 95% CI [1.02; 1.54]), with marginal decrease of the gradient after accounting for adult occupational position (men: OR = 1.17, 95% CI [1.02; 1.35]; women: OR = 1.22, 95% CI [0.99; 1.52]), and no mediating effect by short sleep duration. Low adult occupational position was associated with an increased risk of CHD in both men and women (men: OR = 1.48, 95% CI [1.14; 1.92]; women: OR = 1.53, 95% CI [1.04; 2.21]). Short sleep duration meaningfully contributed to the association between adult occupational position and CHD in men, with 13.4% mediation. Stroke did not exhibit a social patterning with any of the variables examined. CONCLUSION - This study suggests that inadequate sleep accounts to a meaningful proportion of the association between adult occupational position and CHD, at least in men. With sleep increasingly being considered an important cardiovascular risk factor in its own terms, our study additionally points to its potential role in social inequalities in cardiovascular disease.

**KEYWORDS:** Socioeconomic status; Life-course; Sleep duration; Mediation; Cardiovascular disorders

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