

# Insomnia symptoms and risk of cardiovascular diseases among 0.5 million adults

## A 10-year cohort

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on behalf of the China Kadoorie Biobank Collaborative Group

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### Study objective and summary result

This study examined relationships between distinct insomnia symptoms and the risk of incident cardio-cerebral vascular diseases (CVD) in adults; and the results showed that individual and coexisting insomnia symptoms are independent risk factors for incident CVD.

### What is known and what this paper adds

Previous prospective studies have reported that insomnia is associated with increased risks of CVD. This investigation clarifies the relationships between distinct insomnia symptoms and CVD risks.

### Participants and setting

The investigators analyzed data from 487,200 adults (40.9% male; 43.1% residents of urban areas; mean baseline age, 51 years; permitted baseline age range, 30–79 years) who participated in the China Kadoorie Biobank (CKB) study, which recruited participants from 10 geographically diverse areas in China between 2004 and 2008. The selected participants were free of stroke, coronary heart disease, and cancer at baseline.

### Design, size, and duration

At baseline, the CKB participants completed a survey that included questions about insomnia. The responses were analyzed to identify participants who experienced difficulties in initiating or maintaining sleep (DIMS), early morning awakening (EMA), and daytime dysfunction (DDF). Incident CVD diagnoses were detected through established disease registries, national health insurance claims databases, and local residential records. Participants who were not linked to the health insurance databases were contacted annually by study personnel. Each CKB participant was followed until the occurrence of a CVD diagnosis, death, loss to follow-up, or December 31, 2016, whichever came first. Cox proportional

**Table** Associations between insomnia symptoms and incident CVD

Symptom	Hazard ratio (95% CI) for CVD in persons with the symptom vs those without it
DIMS	1.09 (1.07–1.11)
EMA	1.07 (1.05–1.09)
DDF	1.13 (1.09–1.18)

hazards models were used to assess relationships between insomnia symptoms and risks of incident CVD.

### Main results and the role of chance

Over follow-up (median duration, 9.6 years), 130,032 CVD cases were documented. DIMS, EMA, and DDF were each associated with increased risks of incident CVD. Relative to persons without insomnia symptoms, persons with all 3 symptoms had an 18% higher risk of incident CVD.

### Bias, confounding, and other reasons for caution

The investigators lacked data on nonrestorative sleep, which is a common insomnia symptom.

### Generalizability to other populations

Insomnia symptoms were self-reported and assessed once at baseline, leading to potential information bias. The single-country data may not be generalizable to other populations.

### Study funding/potential competing interests

This study was funded by various Chinese government agencies, the Kadoorie Charitable Foundation, and the UK Wellcome Trust. The authors report no competing interests. Go to [Neurology.org/N](http://Neurology.org/N) for full disclosures.

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