



# Sex differences in insomnia, sleep apnea and restless legs syndrome

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Dear Editor,

I read with interest a paper by Jono et al., who reported sex differences of sleep in patients with cardiovascular diseases (CVD) [1]. The prevalence of insomnia, sleep disordered breathing (SDB), anxiety, and depression was used for the analysis. Prevalence of SDB was higher in men, and prevalence of insomnia and depression was higher in women. The authors could not specify the effect of CVD on sex differences in the prevalence of sleep and psychological disturbances. I have comments about the study.

First, McArdle et al. reported the prevalence of sleep disorders in middle-aged inhabitants, and the prevalence (95% confidence intervals [CIs]) of chronic insomnia in females and males were 15.8% (13.1–19.0) and 9.3% (6.8–12.4) [2]. The prevalence (CIs) of restless legs syndrome (RLS) in females and males were 3.7% (2.4–5.4) and 2.2% (1.1–3.9). In contrast, the prevalence (CIs) of OSA in females and males were 24.0% (20.5–27.7) and 47.3% (42.2–53.4). These data show that sex differences in sleep disturbance exist regardless of CVD.

Second, Risk of SDB may be closely related to obesity, which would contribute to the sex difference in the prevalence [2]. Alcohol consumption may also contribute to the sex difference in the prevalence of SDB. SDB is a risk factor for hypertension, and risk of CVD may be closely related to the increased risk of metabolic components. The magnitude in the effect of SDB on CVD should be specified with special reference to sex.

The higher prevalence of insomnia in females may be derived from hormonal and nutritional factors by aging. Bae et al. reported that the prevalence of RLS among patients with iron deficiency anemia was about 40%, presenting

severe to very severe symptoms [3]. The prevalence of IDA is predominant in females, and sex differences in IDA may explain the prevalence of RLS [4]. The association between RLS and hypertension persists only in women, and subgroup analyses by sex should be conducted to specify the risk of RLS in patients with CVD.

## Declarations

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**Conflicts of interest** There is no conflict of interest in this study.

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