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## U-shaped association between sleep duration and radiographically confirmed osteoarthritis among middle-aged and elderly Korean men and women: a nationwide population-based study

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This research is to evaluate the relationship between sleep duration and radiographically confirmed osteoarthritis in the middle-aged and elderly men and women. This study included data from 1288 subjects with osteoarthritis and 7908 control subjects taken from the Korean National Health and Nutritional Examination Survey (KNHANES) -V dataset. Differences in characteristics across osteoarthritis categories were applied using either weighted T test for continuous variables or weighted Chi-square test for categorical variables. Multivariate logistic regression analysis was conducted to examine possible relationships for sleep duration with osteoarthritis. Radiographic osteoarthritis was defined in the subject who has the KL grade (Kellgren Lawrence grade)  $\geq 2$  in the radiographic images on either knee or hip area with knee or hip joint pain. The prevalence of radiographically confirmed osteoarthritis according to sleep duration shows a typical U-shaped curve with the nadir or U-point in the appropriate sleeper (7-8 hours) after adjusting for age, BMI, current smoking, alcohol drinking, regular exercise, marital status, hypertension, diabetes mellitus, CVD and stroke. The multivariate adjusted ORs of short sleep ( $\leq 6$  hours/day) were 1.723-fold higher (95% CI 1.036-2.866) and the odds of long sleep ( $\geq 9$  hours/day) were 1.888-fold higher (95% CI 1.136-3.138) than for those with sleep durations of 7-8 hours/day in men. For women, the ORs of short sleep ( $\leq 6$  hours/day) were 1.350-fold higher (95% CI 1.081 to 1.686) and the odds of long sleep ( $\geq 9$  hours/day) were 1.420-fold higher (95% CI 1.008 to 2.000) than for those with proper sleep durations of 7-8 hours/day after adjusting for the same confounding variables. We found a U-shaped association between sleep duration and osteoarthritis among middle-aged and elderly men and women. Further prospective studies including a larger number of participants over a longer period are warranted to confirm any potential cause-and-effect relationship chronic circadian dysfunctions and the development of osteoarthritis.

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