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study

The association between periodontitis and sleep duration

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RELEVANT BACKGROUND

Short sleep duration has been linked to several inflammatory diseases including diabetes mellitus, hypertension, and coronary artery disease. Increased systemic inflammatory status and oxidative stress are described as causal pathways. Moreover, recent studies suggest that short sleep duration is associated with higher risk for systemic infections caused by an impaired host immune response. On the other hand, prolonged sleep has been associated with morbidity and mortality. Although the mechanism remains unclear, a common pathogenesis with short sleep has been proposed. The detrimental effects of extreme sleep duration – such as systemic inflammation, oxidative stress, and predisposition to infections – are also mechanisms related to periodontal tissue damage. Thus, sleep duration could be a risk factor for periodontitis.

AIMS

This large cross-sectional study aimed to determine if there was an association between periodontitis and sleep duration in a representative sample of the South Korean population.

MATERIALS AND METHODS

Data were retrieved from the 2012 section of the Fifth Korea National Health and Nutrition Examination Survey (KNHANES V) conducted by the Korea Centre for Disease Control and Prevention (KCDC), in a representative sample of the total South Korea population. The survey was composed by health interview, health examination, and nutrition survey. Periodontal status was determined using the Community Periodontal Index (CPI), scored from 0 to 4 (0=healthy, 1-2=gingivitis, 3-4=periodontitis). Multivariate logistic regression analyses were applied to examine the association between periodontitis and sleep duration taking into account confounders including age, gender, BMI, smoking status, nutrition, and the consumption of alcohol, tea, and coffee.

results

- The study included a total population of 5,812 adult participants, representative of 36.9 million Korean adults.
- A strong association between sleep duration and periodontitis was found when age, gender, education, smoking status, and consumption frequency of coffee, tea, chocolate, and red wine were taken into consideration.
- Compared to the group sleeping ≤ 5 h/day, for each additional hour of sleep the odds of having periodontitis increased 17% in those with a CPI score of 4 (95% CI: 1.04-1.32; CPI=4) or 15% in those with a CPI score of 3 and above (95% CI: 1.06-1.24; CPI \geq 3).
- Moreover, people who sleep for more than nine hours have 4.27 times more chance of suffering from periodontitis compared to those who sleep less than five hours (95% CI: 1.83-9.97; CPI=4).
- Age seemed to be the main confounder of the association between sleep duration and periodontitis. Frequency consumption of coffee, tea, chocolate, and red wine was also shown to confound the association.
- The study was not able to find a crude significant relationship between periodontitis and sleep duration.



LIMITATIONS

- This study included a very large number of South Korean participants, but it is problematic to generalise the observations to the worldwide population.
- Using CPI to diagnose periodontal patients has some limitations because of the absence of the attachment-loss component and the use of partial dental records.
- Sleep duration was self-reported by the participants and not measured by any impartial instrument or technique.
- In a multifactorial disease such as periodontitis, the correct identification and weight of the confounder – whether known or unknown – may influence the results.



CONCLUSIONS

In the evaluated population, there is a direct association between periodontitis prevalence and sleep duration. This association has a diversity of confounders such as age, gender, smoking status, and consumption frequency of coffee, tea, chocolate, and red wine.



IMPACT

Additional longitudinal and interventional studies are needed to better understand the directionality of the relationship between periodontitis and sleep duration.



LINK TO ORIGINAL JCP ARTICLE:

<http://onlinelibrary.wiley.com/doi/10.1111/jcpe.12713/full>

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