Christina Valentin

*Association between sleep and severe periodontitis in a nationally representative adult US population.*

Den 1200 E601

Feb. 26th, 2020

Summary

Drs. Hend Alqaderi, J. Max Goodson, and Israel Agaku conducted a national study of a U.S. population that would show if there is an association between the duration of sleep and severe periodontal disease. This study used data from a 2013-2014 U.S NHANES survey; using 3,624 participants, 30 years and older with and without a pre-existing systemic disease (diabetes), has no history or is a current smoker and sleeps ≥ 7 hours a night without difficulty and those that sleep < 7 hours a night. Participants risk indicators of race, sex, education level, and socioeconomical status varied. This study concludes that participants with who had a shorter sleep duration due to sleeping troubles had severe periodontitis, and the presents of diabetes increased the likelihood of periodontal disease, whereas participants with longer sleep duration were less likely to have severe periodontal disease. Participants with diabetes that had long sleep duration decreased their risk of severe periodontal disease; Other risk indicators were also contributors to periodontal disease. Healthy subjects are too at risk for periodontal disease when sleep is decreased.

Article Information

*Association between sleep and severe periodontitis in a nationally representative adult US population.* Is an article about a study that was conducted by Hend Alqaderi, J.Max Goodman, and Israel Agaku. The article was published in *The Journal of Periodontology* on 21 November 2019 <https://aap.onlinelibrary.wiley.com/doi/10.1002/JPER.19-0105>; <https://www.ncbi.nlm.nih.gov/pubmed/31749207>; doi: 10.1002/JPER.19-0105. The authors stated in their acknowledgements that there was no financial support and they did not experience any conflicts of interest whilst conducting their study.

Study Analysis

This case control study was conducted using NHANES cross- sectional survey from 2013-14 survey “in compliance with the data use restrictions for data collected by the National Center for Health Statistics, Centers for Disease Control and Prevention”. This study was conducted in the U.S., nationally.

A good night's sleep has many benefits to a person’s health and daily functionality. This study was conducted to establish that adequate sleep has a positive effect on the periodontium due to metabolic and hormonal balance and boost one’s immunity. It was also hypothesized that sleep duration would have different effects on subject with and without diabetes. This study also wanted to know if smoking had any association to sleep duration and periodontal disease.

Studies have proven that diabetes is strongly associated with periodontal disease, as well as lack of sleep is associated with diabetes, and cardiovascular disease. Additionally, sleep disorders are actively linked to glucose intolerance and inflammation within patients that did not have diabetes.

Experimental design

This study used data from a 2013-2014 U.S NHANES survey; using 3,624 participants, 30 years and older with and without a pre-existing systemic disease (diabetes), has no history or is a current smoker and sleeps ≥ 7 hours a night without difficulty and those that sleep < 7 hours a night. Participants risk indicators of race, sex, education level, and socioeconomical status varied. The dependent variables in this study; taking a full mouth periodontal exam to produce a “gold standard assessment of clinical attachment loss” and all the calculation were rounded down to the lowest whole millimeter, and individual that had readings more that 2 interproximal readings of >6mm CAL on different teeth and probing depths of ≥5mm. Independent variables in this study was how many hours of sleep subject has and if they were ever told by a physician if they had ever been told if they have sleeping trouble. If the subjects answered they slept ≥ 7 hours and had no sleeping troubles, they were placed in the group “sleep duration ≥7 hours/nights, if subjects had slept < 7 hours they were grouped in “sleep duration

< 7mm”. The modifier variables was whether or not they had been told they have a diabetes or not or were borderline, if they smoked or not, and other risk indicators such as age, sex, race, education level, socioeconomic status, and number of dental visits were also considered,

The date as to when that study gathered data and conducted this study was 2013-14 and findings were published in 2019,

This study did analyze their findings statistically using STAT 12 software to test their hypothesis that sleeping 7 or more hours a night could protect from severe periodontal disease, and if diabetes has any relationship to sleep duration and periodontal disease.

Results

3624 subjects were used in this study and the results are as followed; Table 1 indicates 8.7% had severe periodontal disease, 73.2% of subjects that had severe periodontal disease experienced shorter sleep durations with a sleeping problem; 49% of subjects with severe periodontal disease were current smokers and 52% without severe periodontal disease were nonsmokers. 90.2% of subjects did not have severe periodontal disease and did not have diabetes. When it came to sex males had a greater prevalence to severe periodontal disease to that of females, at 68.1% compared to 31.9%. Older subjects had a greater prevalence at 50.4% than the younger ages.

Table 2 shows that subjects that slept 7 hours or more a night without a sleeping problem were less likely to have severe periodontal disease, but diabetes had a significant positive effect on the relationship between the duration of sleep and periodontal disease, and modifies he relationship between duration of sleep and periodontal disease, smoking did not have any influence in the relationship between periodontal disease and the duration of sleep. Risk indicators such as socioeconomic status didn’t indicate a significant difference in the presence of severe periodontal disease and slept

This study shows that subjects that slept 7 or more hours that did not have any sleeping problem did not have severe periodontal disease, subjects that have diabetes and that slept 7 or more hours are less likely to have severe periodontal disease.

Conclusion

Findings of this study indicate that there is an association in sleep duration and periodontal disease especially if one has diabetes. There is a link to periodontal disease and sleep duration in people that don’t have diabetes, because sleep deprivation causes a disruption in the circadian rhythm, the circadian rhythm is the process that regulates the sleep-wake cycle. A disruption in this cycle decreases the release of melatonin, which is secreted by the pineal gland at night and is also responsible for regulating insulin secretion, which could result in hyperglycemia. This disturbance can also cause a hormonal imbalance which could cause systemic inflammation and suppress immunity.

Ultimately, more studies would like to be conducted; gathering data of sleep quality not just the quantity of sleep and what is it effect on the periodontium

Personal Opinion

I found this article very interesting, I wanted to know if there was a significant link between a lack of sleep and periodontal disease. This study mostly showed a stronger link to sleep duration to periodontal disease with those who have diabetes, but there is an association of sleep duration and its effects on the circadian rhythm and that ultimately could disrupt the ones release of melatonin, hormones secretion, and systemic inflammation. The conductors of this study would like to continue with more longitudinal studies and one question I’d like answered would be does the severity of brushing and flossing before bed have a difference in the outcome of the extent of Periodontal disease on healthy and diabetic individuals.

Work Cited

Alqaderi H, Goodman J Max, and Agaku <https://aap.onlinelibrary.wiley.com/doi/10.1002/JPER.19-0105>; 2019

<https://www.ncbi.nlm.nih.gov/pubmed/31749207>;