

REVIEW ARTICLE

Investigating Oral Health Among U.S. Adults with Sleep Disorders: Critical Review of a Cross-Sectional Study

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ABSTRACT

Oral health and sleep are closely related components of overall health, yet the association between sleep disorders and oral health outcomes remains insufficiently understood. This critical review evaluates a cross-sectional study investigating oral health among adults with sleep disorders in the United States using data from the National Health and Nutrition Examination Survey (NHANES) 2017–2018. The reviewed study included 6,161 adults and examined associations between sleep disturbances and oral health outcomes, including oral pain, periodontal disease, oral-health-related emotional effects, and difficulties in work or school performance. Adults with sleep disorders demonstrated poorer oral health outcomes than those without sleep disorders. After adjustment for potential confounding factors, sleep disorders remained significantly associated with oral pain, negative emotional effects related to oral health, and difficulties affecting work or school. Smoking, lower income, lower educational attainment, and diabetes were also associated with poorer oral health. The large, nationally representative sample and adjustment for several potential confounders strengthen the relevance of the findings. However, the cross-sectional design, reliance on self-reported information, and questionnaire-based assessment of sleep disorders limit causal interpretation and may introduce bias. Overall, the evidence supports an association between sleep disorders and poorer oral health while highlighting the need for prospective studies using validated sleep assessments and clinical oral examinations.

Introduction

Oral health is an important component of overall health and quality of life. Healthy teeth and gums allow individuals to eat comfortably, communicate effectively, and maintain self-confidence. Likewise, sleep is a fundamental biological

process necessary for physical recovery, cognitive function, emotional regulation, and immune health. In recent years, researchers have increasingly recognized that sleep and oral health may be interconnected. Sleep disorders such as insomnia, obstructive sleep apnea, and excessive daytime sleepiness affect millions of adults and have been associated with a variety of

chronic health conditions.

The article “Investigating Oral Health Among US Adults with Sleep Disorder: A Cross-Sectional Study” examined whether adults with sleep disorders experience poorer oral health outcomes than adults without sleep disorders [1]. Using data from the National Health and Nutrition Examination Survey (NHANES) 2017–2018, the researchers evaluated the relationship between sleep disturbances and several oral health indicators. This topic is clinically important because both sleep disorders and oral diseases are highly prevalent public health concerns that significantly affect quality of life and healthcare costs.

Purpose of the Study

The primary objective of the study was to investigate whether sleep disorders are associated with adverse oral health outcomes among adults in the United States. The researchers hypothesized that individuals with sleep disorders would report greater oral pain, periodontal disease, poorer oral health perceptions, and greater impacts on daily activities than individuals without sleep disorders [1].

Study Design and Methodology

The researchers conducted a cross-sectional study using NHANES 2017–2018 data. NHANES collects health information from a nationally representative sample of the U.S. population. The study included 6,161 participants representing approximately 255.9 million Americans.

Oral health outcomes were assessed using the Oral Health Questionnaire (OHQ). Participants reported oral pain, periodontal disease, bone loss, the overall condition of teeth and gums, embarrassment related to oral health, and whether oral-health problems affected school or job performance [1].

Sleep disorders were assessed through questions regarding trouble sleeping and excessive daytime sleepiness. Additional demographic and health-related variables included age, sex, race, education level, marital status, income, smoking status, alcohol use, diabetes, and sleep duration. These factors were included because they may independently influence oral health outcomes.

Statistical analyses included chi-square tests and logistic regression models. Logistic regression allowed the researchers to calculate adjusted odds ratios (aORs), which estimate the likelihood of an outcome while controlling for potential confounding variables. A p-value less than 0.05 was considered statistically significant [1].

Results

The study identified several important associations between sleep disorders and oral health outcomes. Individuals with sleep disorders reported substantially worse oral health than those without sleep disorders [1].

Approximately 19.8% of participants with sleep disorders reported oral pain, compared with 11.8% of participants without sleep disorders. Similarly, periodontal disease was reported by 19.5% of participants with sleep disorders compared with 12.25% among participants without sleep disorders [1].

The psychological impact of oral health was also notable. Twenty-one percent of participants with sleep disorders reported feeling embarrassed or negatively affected by their oral health, compared with 12% of participants without sleep disorders. In addition, 32.6% of participants with sleep disorders reported difficulties at work or school because of oral health issues, whereas 12.9% of participants without sleep disorders reported similar difficulties [1].

After adjustment for potential confounding factors, sleep disorders remained significantly associated with adverse oral health outcomes. Individuals with sleep disorders had 1.58 times greater odds of experiencing oral pain, 1.59 times greater odds of reporting embarrassment or negative feelings about oral health, and 2.27 times greater odds of reporting difficulties with work or school because of oral health problems [1].

The study also identified smoking, lower income, lower educational attainment, and diabetes as important factors associated with poorer oral health outcomes. These findings demonstrate that oral health is influenced by both behavioural and social determinants of health [1].

Discussion

The findings suggest a meaningful relationship

between sleep disorders and oral health. Several biological and behavioural mechanisms may explain this association. Sleep deprivation can dysregulate immune responses and increase pro-inflammatory signalling, providing a plausible pathway through which disrupted sleep could contribute to inflammatory oral conditions and delayed tissue recovery [2].

In addition, individuals with chronic sleep problems may experience fatigue, stress, and reduced motivation for self-care. These factors may make consistent oral-hygiene practices and routine dental attendance more difficult. Sleep disorders may also coexist with conditions such as sleep bruxism, xerostomia, and obstructive sleep apnea, which can adversely affect the oral cavity [3].

The study supports a wider body of literature indicating an association between poor sleep and periodontal disease. A recent review found that most included observational studies reported increased odds of periodontitis among individuals with poor sleep quality; however, the evidence remains primarily observational and heterogeneous [4]. Therefore, the present findings should be interpreted as evidence of association rather than proof that sleep disorders directly cause poor oral health.

Clinical and Public Health Implications

The findings have important implications for both clinical practice and public health. Dental professionals should be aware that patients presenting with sleep disturbances may be at increased risk for oral pain, periodontal disease, and reduced quality of life. Screening questions regarding sleep habits may help identify patients who could benefit from further evaluation.

From a public health perspective, the study highlights the need for educational programs that promote both healthy sleep habits and good oral hygiene. Addressing social determinants such as income, education, and smoking cessation may also contribute to improvements in oral health outcomes.

Critical Evaluation

It is observed that the study demonstrates the interconnected nature of oral and general health. The use of a large, nationally representative

database and adjusted statistical analyses strengthens the credibility and relevance of the findings. The study also evaluates outcomes beyond clinical disease, including oral pain, emotional effects, and work or school difficulties, thereby providing a broader assessment of oral health-related quality of life.

However, the cross-sectional design prevents conclusions about temporality and causation. It cannot be determined whether sleep disorders preceded poor oral-health outcomes, whether oral conditions adversely affected sleep, or whether both were influenced by unmeasured factors. In addition, key variables were self-reported and may be affected by recall bias or differences in how participants interpret symptoms. The classification of sleep disorder through questionnaire items rather than clinical diagnosis may also introduce misclassification.

It is therefore appropriate to interpret the results as a strong indication of an association rather than a causal relationship. Future prospective studies using validated sleep assessments, clinical oral examinations, and repeated follow-up would be valuable in determining whether improvements in sleep lead to measurable improvements in oral-health outcomes.

Conclusion

The study demonstrated a significant association between sleep disorders and poor oral-health outcomes. Individuals with sleep disorders were more likely to experience oral pain, periodontal disease, emotional distress related to oral health, and difficulties in work or school performance [1]. Despite limitations related to the cross-sectional design and self-reported data, the findings provide valuable evidence supporting an association between sleep and oral health. The study emphasizes the need for interdisciplinary healthcare strategies and future research exploring causal relationships between sleep disorders and oral health.

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