



Relationship between Disruptive Sleep Behaviors and Tendency to Smoke Cigarettes among Adults

Authors: Margi Sojitra, Ankit Bhanderi, Poonam Sojitra

General Dental Practitioners, Gujarat, India

Date of Submission: 20-03-2025

Date of Acceptance: 30-03-2025

ABSTRACT:

This study investigates the relationship between disruptive sleep behaviors and cigarette smoking in adults, addressing a gap in the literature where smoking has often been treated as an independent variable. A sample of 30 adult participants completed an online questionnaire assessing sleep disruptions—including average sleep hours, clinically diagnosed sleep disorders, and sleep-related phenomena—and their smoking habits. The results indicate no significant association between smoking and most sleep disruption variables; however, a notable correlation was found between clinically diagnosed sleep disorders and smoking behavior ($p = 0.018$). Additionally, the frequency of waking due to urination emerged as a significant factor ($p = 0.004$). Despite these findings, the hypothesis that individuals with disruptive sleep behaviors are more likely to smoke cigarettes was not supported. Limitations include a small sample size, potential selection bias, and social stigma affecting self-reported smoking behaviors. Further research is needed to explore these relationships more comprehensively and to overcome the methodological constraints of this preliminary study.

I. INTRODUCTION:

Sleeping issues are widely prevalent and include deficits in quantity and quality of sleep; sleep problems that impact the continuity of sleep are collectively referred to as sleep disruptions (Medic et al., 2017). Sleep disturbances resulting in insufficient sleep have been linked to negative physical, cognitive, and public health outcomes. Current smokers reported significantly less total sleep time, longer sleep onset latency, increased difficulty falling asleep, maintaining sleep, and waking up earlier than desired when compared to NS (McNamara et al., 2014).

Nicotine increases vigilance and decreases sleeping time. Cigarette smoking is associated with initiating and maintaining sleep and promotes snoring. Awakening from sleep and daytime sleepiness can occur frequently in nicotine withdrawal. In smokers, sleep disturbances must be considered (Under ner et al., 2006).

Smoking was associated with difficulty initiating sleep and with a constellation of symptoms suggestive of sleep fragmentation. Compared to nonsmokers, smokers have increased prevalence of sleep disordered breathing (Wetter & Young, 1994). Ambient temperature exerts a prominent influence on sleep. In humans, low ambient temperatures generally impair sleep, whereas higher temperatures tend to promote sleep (Jhaveri et al., 2007). Snoring is a common cause of disturbed sleep for both the snorer and their partner. Whilst the physical effects of snoring are well documented as causing excessive day time sleepiness, decreased effectiveness at work and irritability (Venn, 2007).

The relationship between disruptive sleep behaviors and cigarettes smoking has previously been investigated. While several studies examine smoking as independent variable, there is no investigations into the smoking as dependent variable. As a result, the purpose of this research is to examine whether there is a relationship between disruptive sleep behaviors and smoking cigarettes among adults? The hypothesis of this study states that compared to those who do not experience disruptive sleep behaviors, people who experience disruptive sleep behaviors are more likely to smoke cigarettes among adults.

II. METHODS:

For this explanatory research, 30 adult participants were recruited. The study participants filled out an online questionnaire including 10 questions via Survey Monkey confidentially. As shown in Table 1, there were a total of 10 variables, including 3 demographic, 6 independent sleep variables, compared to one dependent variable. The questionnaire was designed as one question per one variable. The independent variable was having sleep disruptions, and the dependent variable was smoking cigarettes.

The independent variables included for disruptive sleep behaviors were average sleep hours, awakening gasping or choking, clinically diagnosed sleep disorders, frequency of interrupted sleep due to urination, snoring and sleep walking. Demographic variables such as age, environmental



noise and room temperature during sleep were included. All variables had coded response items except participant's current age, room temperature during sleeping and number of times participant wakeup for urination as they are considered as continuous variables. Most of the categorical response questions include usually, rarely, never, and yes, no, unknown. Responses of 'usually' were coded as 1, responses of 'rarely' were coded as 2, and responses of 'never' were coded as 3. Responses of 'yes' were coded as 1, responses of 'no' were coded as '2' and responses of 'unknown' were coded as 3. Any missing responses were coded as 99.

For the analysis of categorical or nominal data, contingency 2x 2 table and chi-square test were used, and the statistical significance was determined by the value of two-sided significance of Fisher's exact test. For analysis of continuous or scale data, independent samples T-test was used, and the statistical significance was determined by the value of two-tailed significance and t value.

III. RESULTS:

There was total 30 study participants and there were no missing responses. The descriptive statistics table (Table 1) depicts that from the study, participants who receive the recommended amount of sleep account for 26.7% and who don't receive recommended amount of sleep account for 73.3% of the sample. 66.7% of the sample population reported awakening, gasping, or choking. 36.7% had clinically diagnosed with sleep disorder in the last one year.

96.7% noticed snoring while sleeping. 13.3% of participants noticed walking while sleeping. 80% of participants reported that they woke up 2 or less times due to background noise. For smoking cigarettes during bedtime, 60% of the sample population did smoke before bed and 40% did not. The mean number of times the respondent woke up for urination was 1.87 with standard deviation of 1.137 (Figure1). The mean of current age of respondent was 30.63 and the mean of room temperature while sleeping was 67.8.

The chi-square test showed there is no significant association between smoking cigarette during bedtime and average hours of sleep (Fisher's exact test = 1.000), awakening gasping or choking (Fisher's exact test = 0.139), noticed snoring while sleeping of respondent (Fisher's exact test = 1.000), noticed walking while sleeping of respondent (Fisher's exact test = 0.274), Number of times respondent wake up due to background noise (Fisher's exact test=1.000). The chi-square test showed there is significant association between

and clinically diagnosed sleep disorder in last one year and smoking cigarette during bedtime (Fisher's exact test= 0.018). The five of six independent, categorical variables were all in significant and the independent samples t-test for the three continuous variables shows that only one variable was statistically significant which was number of times respondent wakes up for urination (2-tailed P value = 0.004).

Therefore, I fail to reject the null hypothesis- Among participants in this study, those with disruptive sleep behaviors are not anymore likely to be smoking cigarettes during bedtime.

IV. CONCLUSIONS:

The hypothesis of the study is compared to those who do not experience disruptive sleep behaviors, people who experience disruptive sleep behaviors are more likely to smoke cigarettes among adults in New Jersey. This study was expected to see the association between having sleep disruptive behaviors, and increased tendency of smoking cigarettes. In addition to, association of demographic factors such as room temperature, background noise, age, and smoking cigarettes were also observed.

As with most studies, the design of the current study is subject to some methodological limitations such as sample size, selection of participants, lack of previous research studies on the topic. Another limitation is the social stigma around smoking among participants. As this survey was conducted as electronic survey, recruitment of participants was difficult. As the sample size is 30, it is not representative for whole population. Therefore, the findings cannot be generalized for the population. The participants were among the people whom I know so it may be selection bias. There is lack of previous research studies considering cigarette smoking as the dependent variable. So, there is not sufficient background information. Another limitation can be social stigma as some people may not reveal that they smoke. This may be due to cultural, religious, or moral reasons. Due to the collapse of one of three response categories into another to obtain dichotomous responses, there is the chance of measurement bias which may lead to measurement inaccuracies during interpretation.

REFERENCES:

- [1]. Jhaveri, K.A., Trammell, R.A., & Toth, L.A. (2007). Effect of environmental temperature on sleep, locomotor activity, core body temperature and immune responses of C57BL/6J mice.



Brain, behavior, and immunity, 21(7), 975-987.

[2]. McNamara, J. P., Wang, J., Holiday, D. B., Warren, J. Y., Paradoa, M., Balkhi, A. M., ... & McCrae, C.S.(2014).Sleepdisturbances associatedwithcigarettesmoking. *Psychology, health & medicine*, 19(4), 410-419.

[3]. Medic,G., Wille,M.,&Hemels,M.E.(2017).Short-andlong-termhealthconsequencesof sleep disruption. *Nature and science of sleep*, 9, 151.

[4]. Underner,M.,Paquereau,J.,&Meurice,J.C.(2006).Cigarettesmokingandsleep disturbance. *Revue des maladies respiratoires*, 23(3 Suppl), 6S67-6S77.

[5]. Venn,S.(2007).‘It’sokayforaman tosnore’:theinfluenceofgenderonsleep disruptionin couples. *Sociological Research Online*, 12(5), 159-172.

[6]. Wetter,D.W.,&Young,T.B.(1994).Therelation betweencigarettesmoking andsleep disturbance. *Preventive medicine*, 23(3), 328-334.

Table1.DescriptiveStatistics ofDemographic/Sleep and Dependent Variables

CategoricalVariables	N	%
AverageHoursofSleepof Respondent		
Recommended amount of sleep	8	26.7
NotRecommendedamountofsleep	22	73.3
AwakeningGaspingsorChoking		
Yes, I’ve	20	66.7
No,Ihaven’t	10	33.3
ClinicallyDiagnosedSleepDisorder inLastOne Year		
Yes	11	36.7
NO	19	63.3
NoticedSnoringwhileSleepingof Respondent		
Yes, I do	29	96.7
No,I don’t	1	3.3
NoticedWalkingwhileSleepingof Respondent		
Yes, I do	4	13.3
No,I don’t	26	86.7
No.ofTimesRespondentWakeuptoBackground Noise		
2orless time	24	80.0
Morethan2times	6	20.0
RespondentSmokes Cigaretteduringbedtime		
Yes	18	60.0
No	12	40.0



Continuous Variables	N	Mean
No.ofTimes RespondentWakes Up forUrination	30	1.87
CurrentAgeof Respondent	30	30.63
RoomTemperatureofRespondentWhileSleeping	30	67.8

Figure1.No.ofTimes RespondentWakesup forUrination Histogram

