UC San Diego
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The Association Between E-Cigarette Use and Sleep Duration Among UCSD Undergraduate Students

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References

Background

- E-cigarette use has become a rising trend among college students.[3]
- Nicotine disrupts the circadian rhythm and reduces melatonin production, both of which are necessary for falling asleep.[5]
- Frequent nicotine use can lead to withdrawal symptoms, nighttime cravings, and physical effects that disturb sleep.[5]
- Short sleep duration due to nicotine can contribute to chronic health issues.[4]

Objective

To determine whether there is an association between the use of e-cigarettes and sleep duration among UCSD undergraduate students.

Methods

- An anonymous cross-sectional study conducted 17 questions using Qualtrics was disseminated to UCSD students (age 18-50).
- The questionnaire asked students to self-report their e-cigarette usage and sleep duration.
- Students were recruited via social media and course announcements.

Exposure: E-Cigarette Use

- Penn State Nicotine Dependence Index (PSNDI).[2]
- Vaping behavior, such as nicotine strength, refill frequency, frequency of use, and behavior like waking up at night to vape.

Outcome: Sleep Duration

- Pittsburgh Sleep Quality Index (PSQI). [1]
- Average hours of sleep per night, difficulties falling asleep, use of sleep aids.

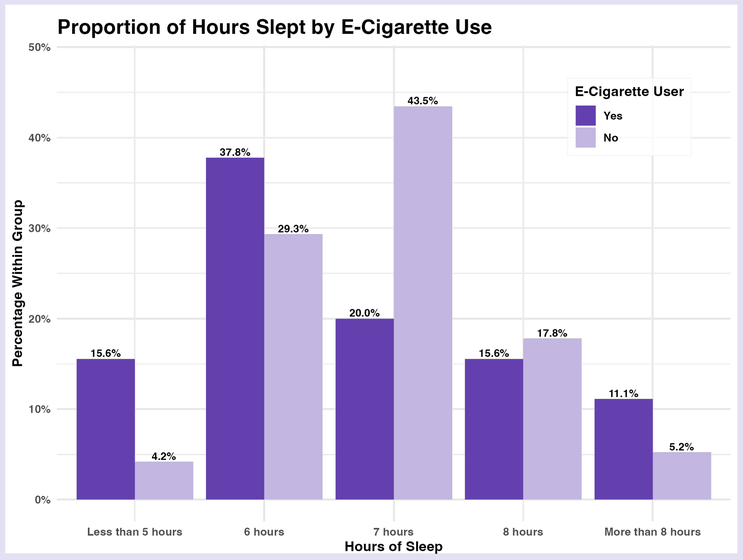


Table 1: Demographics Stratified by E-Cigarette Use

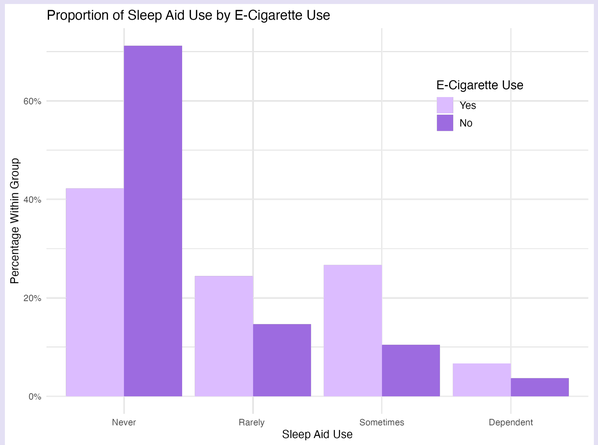
Demographics	Yes	Percent	No	Percent	P-Value
Gender					
Man	24	26.7	66	73.3	0.261
Woman	20	14.6	117	85.4	0.055
Non-binary/third gender	—	—	6	100	—
NA	1	33.3	2	66.7	1.000
Grade					
First Year	5	11.1	40	88.9	0.266
Second Year	10	19.3	42	80.8	0.137
Third Year	11	15.7	59	84.3	0.054
Fourth Year	16	25.8	46	74.2	0.041
Fifth Year or Higher	3	42.9	4	57.1	0.907
Race/Ethnicity					
African American or Black	1	25.0	3	75.0	1.000
Asian	20	14.1	122	85.9	0.023
Hispanic/Latinx	11	30.6	25	69.4	0.762
Middle Eastern or North African	1	11.1	8	88.9	0.325
Multiracial	6	31.6	13	68.4	0.032
White	6	23.1	20	76.9	0.140

Number of e-cigarette users and non e-cigarette users across the demographic groups. The p-value indicates the statistical significance of the association between e-cigarette users, sleep duration and demographic factors.

Outcome	Yes	Percent	No	Percent
Hours				
Less than 5 hours	7	15.6	8	4.2
6 hours	17	37.8	56	29.3
7 hours	9	20.0	83	43.5
8 hours	7	15.6	34	17.8
More than 8 hours	5	11.1	10	5.2
Sleep Aid				
Never	19	42.2	136	71.2
Rarely	11	24.4	28	14.7
Sometimes	12	26.7	20	10.5
Dependent	3	6.7	7	3.7

Table 2: Outcome Stratified by E-Cigarette Use

Number of e-cigarette users and non e-cigarette users across the outcome categories.



Main Findings

- Total Participants: 240 undergraduate UCSD students.
- **E-Cigarette Use**:
  - 19% (n=45) reported using e-cigarettes
  - 81% (n=191) were non-users
- **Average Sleep Duration**
  - E-cigarette users: ~6.8 hours
  - Non-users: ~7.2 hours
- **Use of Sleep Aids**
  - 57.8% of e-cigarette users use sleep aids
  - 28.8% of non-users use sleep aids
- **Pearson's Chi-squared test**

$$X^2\ (4, N=236) = 15.47, p < 0.0382$$

- **Collapsed Pearson's Chi-Squared Test**

$$X^2\ (2, N=236) = 9.181, p < 0.01015$$

Both chi-squared tests Indicates a significant association between e-cigarettes and sleep duration.

Conclusion

- E-cigarette users on average had slept slightly less than non e-cigarette users.
- Observed higher use of e-cigarettes among men, multiracial and hispanic individuals, as well as undergraduate students in their fifth year or higher.
- Nicotine users were more likely to report sleep aid use compared to non nicotine users, which may have influenced their sleep duration.
- This observation may suggest that nicotine could still impact one's sleep quality in ways that will lead on to use sleep aids to fall asleep.
- Need further research on the indirect impacts of nicotine on sleep health.
- Cannot generalize our results to all types of nicotine user.

- Limitations:
  - Small group of individuals who used e-cigarettes, this could have disproportionally affected they results of the study.

Policy Implications

- Student Health Services should continue to promote awareness on the impacts of e-cigarettes on sleep quality.
- Universities should integrate workshops and provide more resources such as Nicotine Replacement Therapy and cessation services for students trying to quit nicotine.

Acknowledgments

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