



Smoking and Sleep Quality Among Turkish Adults: A Cross-Sectional Study

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ABSTRACT

Objectives: This study aims to investigate whether there is a relationship between smoking status, sleep quality, and self-efficacy perception.

Methods: A cross-sectional study was conducted among adults who visited the family medicine clinic of a tertiary hospital between May and July 2023. A 20-item questionnaire prepared by the researchers, the Pittsburgh Sleep Quality Index (PSQI), the Fagerström Test for Nicotine Dependence (FTND), and the General Self-Efficacy Scale were used.

Results: In the study, 440 participants were included. The median PSQI, General Self-Efficacy Scale, and FTND scores were 12.0 (6.0–21.0), 64.5 (42.0–85.0), and 3.0 (0.0–10.0), respectively. Smokers had significantly higher PSQI scores compared to non-smokers and former smokers (12.0 [6.0–21.0] vs. 11.0 [6.0–18.0] vs. 11.0 [8.0–17.0], respectively, $p<0.001$). However, Self-efficacy scores did not differ significantly among the groups ($p=0.431$). While a significant positive correlation was found between FTND scores and PSQI scores, no significant correlation was found between self-efficacy ($r=0.140$, $p=0.036$, and $p=0.689$, respectively).

Conclusion: There was a significant association was observed between smoking and poorer sleep quality. However, no significant relationship was found between smoking status and self-efficacy perception.

Keywords: Self efficacy, sleep disorders, smoking, tobacco use disorder



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INTRODUCTION

Smoking remains one of the most critical public health challenges of the 21st century, claiming 8.7 million lives globally each year, with 80% of these deaths occurring in low- and middle-income countries.^[1,2] In Türkiye, around 16 million people smoke, resulting in 100,000 deaths annually attributed to smoking-related issues.^[1] While the physical health risks of smoking are well-documented, its psychological and behavioral impacts – particularly on sleep quality and self-efficacy – are less comprehensively studied, especially in non-Western contexts like Türkiye. This gap limits the development of culturally relevant, evidence-based interventions that are crucial in primary care settings, where physicians play a pivotal role in smoking cessation efforts.

Sleep quality, a critical determinant of physical and mental health, is frequently compromised among smokers due to nicotine's stimulant effects that disrupt circadian rhythms and reduce sleep efficiency.^[3,4] However, the literature presents conflicting findings: Meta-analyses have linked smoking to poor sleep outcomes, such as prolonged sleep latency and reduced REM

sleep.^[5] In addition, longitudinal studies suggest a bidirectional relationship, where poor sleep may also exacerbate nicotine dependence.^[6] Confounding factors, including comorbid mental health conditions and socioeconomic stressors, are often unaddressed, further complicating interpretations.^[7] Clarifying this relationship is essential, as sleep disturbances impair occupational performance, increase psychological distress, and may hinder smoking cessation efforts.^[8]

Similarly, the relationship between smoking and self-efficacy is complex. The connection between smoking habits and self-belief is intricate involving psychological and behavioral aspects.^[9] Studies generally suggest that low self-confidence can make it easier to start and continue smoking while high self-confidence is linked with efforts to quit smoking.^[9-11] However, personal differences and environmental factors also play a role in shaping individual's beliefs about their capabilities. This discrepancy suggests that cultural context may influence how self-efficacy shapes smoking behaviors. Despite potential synergies, sleep quality and self-efficacy are rarely examined together in smoking research. Poor sleep may erode self-efficacy by impairing emotional regulation and decision-making, thereby reinforcing smoking habits. Conversely, high self-efficacy could mitigate sleep disturbances by fostering healthier routines. Most existing studies, however, isolate these variables, and the majority of evidence comes from Western populations, limiting generalizability to countries like Türkiye. Importantly, this study provides practical insights for primary care settings, where family physicians are the first point of contact in health-care. Understanding how sleep quality and self-efficacy intersect in the context of smoking can inform holistic, culturally sensitive intervention strategies. For instance, if sleep quality mediates the smoking–self-efficacy relationship, incorporating sleep hygiene education into cessation programs could enhance their effectiveness. Given Türkiye's high smoking prevalence, limited behavioral health resources, and the central role of primary care providers in smoking cessation counseling, these insights are crucial for developing effective interventions to reduce tobacco-related morbidity and mortality.

Therefore, the present study aimed to investigate the relationship between smoking status, sleep quality, and self-efficacy perception among Turkish adults.

METHOD

This cross-sectional study was conducted between May and July 2023 at the Family Medicine Clinic of a tertiary care hospital in Erzincan, Türkiye, a setting that provides

comprehensive services and serves as a primary point of contact for a diverse patient population, making it suitable for assessing smoking-related health behaviors. The study population consisted of voluntary individuals aged 18 years and older who visited the clinic for any reason and were proficient in Turkish, with individuals diagnosed with sleep disorders or using sleep-related medications excluded to eliminate confounding factors affecting sleep quality. The sample size was calculated based on the recommendations of MacCallum et al. for factor analysis, which suggests interviewing at least 20 participants per survey question; given the 20 questions in the survey, the initial target was 400 participants, with the final number increased to 440 to account for a potential 10% data loss.^[12] The dependent variables in this study were sleep quality and self-efficacy perception, while the independent variables included smoking status and nicotine dependence level. In addition, demographic characteristics such as age, gender, marital status, educational level, and family history of smoking were considered as control variables to account for potential confounding effects.

Participants were administered a 20-item questionnaire prepared by the researchers through a literature review, which inquired about their demographic data, smoking, alcohol, tea, and coffee consumption status. In addition, the Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality, the Fagerstrom Test for Nicotine Dependence (FTND) was used to measure the level of nicotine addiction among smokers, and the General Self-Efficacy Scale was used to assess self-efficacy perception.

The PSQI is a scale developed by Buysse et al. in 1989 and adapted into Turkish by Ağargün et al.^[13,14] It is used to measure sleep quality. The PSQI consists of 7 components: Subjective sleep quality, latency, duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction. Each item is evaluated on a 0–3 point scale, and the sum of the scores of the seven components yields the total PSQI score. The total score ranges from 0 to 21, with higher scores indicating poorer sleep quality.^[14] The reliability of the Turkish version of the PSQI has been reported with a Cronbach's α of 0.69, indicating acceptable internal consistency.

FTND is a test developed by Heatherton et al. and adapted into Turkish by Uysal et al. in Türkiye to measure nicotine dependence among smokers.^[15,16] The Turkish version of the FTND has been found to have moderate reliability, with a Cronbach's α of 0.56. The FTND, consisting of six questions, categorizes nicotine addiction severity as follows: Scores of 0–2 indicate very low dependence, 3–4 in-

dicating low dependence, 5 indicating moderate dependence, 6–7 indicating high dependence, and 8–10 indicating very high dependence.

General self-efficacy scale is a scale developed by Sherer and Adams, consisting of 17 items in a five-point Likert format.^[17] Turkish validity and reliability study was conducted in 2010.^[18] Each item on the scale is rated on a 1–5 scale. Items 2, 4, 5, 6, 7, 10, 11, 12, 14, 16, and 17 are reverse scored. The total score on the scale can range from 17 to 85; an increase in score indicates an increase in self-efficacy belief.^[18] The Cronbach's alpha coefficient for the entire scale was found to be 0.80, indicating high reliability.

Data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) Statistics 23 (SPSS, Chicago, IL). The Kolmogorov–Smirnov test assessed data normality. Since the data were not normally distributed, results were presented as median (min–max) for continuous variables and frequency and percentage for categorical variables. The Mann–Whitney U test was used to compare two independent groups, while the Kruskal–Wallis test was applied for comparisons involving more than two independent groups. Spearman correlation analysis was conducted to evaluate relationships between numerical variables. In addition, the Chi-square test was used to examine associations between categorical variables. The statistical significance level was set at $p < 0.05$.

RESULTS

In the study, 440 participants were involved and the sociodemographic characteristics and smoking habits of the participants are summarized in Table 1.

Of the 225 participants who smoked, 192 (85.3%) had relatives who smoked, compared to 144 (75.4%) of the 191 non-smokers ($p = 0.037$).

Correlation analysis revealed a significant positive correlation between FTND scores and PSQI scores and a significant negative correlation between self-efficacy and PSQI scores ($r = 0.140$, $p = 0.036$ and $r = -0.143$, $p = 0.003$, respectively). No significant correlation was found between FTND scores and self-efficacy ($p = 0.689$).

Of the 249 participants who were current smokers or had quit, 152 (61.0%) thought that smoking affected their sleep, 78 (31.3%) disagreed and 19 (7.6%) were unsure. The PSQI scores of those who thought smoking affected their sleep were 13.0 (6.0–21.0), those who thought it did not affect their sleep were 11.0 (7.0–17.0), and those who were not sure were 11.0 (8.0–14.0) ($p < 0.001$).

Table 1. Sociodemographic characteristics and smoking habits of the participants

	n (%)
Gender	
Female	165 (37.5)
Male	275 (62.5)
Education	
Illiterate/literate	7 (1.6)
Primary/secondary school	38 (8.6)
High school	66 (15.0)
University	329 (74.8)
Marital status	
Married	199 (45.2)
Single	228 (51.8)
Widowed	13 (3.0)
Profession	
Non-operating	27 (6.1)
Student	79 (18.0)
Civil servant	181 (41.1)
Worker	84 (19.1)
Other	69 (15.7)
Smoking	
Yes	225 (51.1)
No	191 (43.4)
Quit smoking	24 (5.5)
Duration of smoking	
0–6 months	5 (2.0)
6 months–1 year	14 (5.6)
1–5 years	51 (20.5)
Over 5 years	179 (71.9)
A relative of a smoker	355 (80.7)
Yes	85 (19.3)
No	
Thinking about quitting smoking	
Yes	134 (59.8)
No	90 (40.2)
Median (min–max)	
Age (years)	29.5 (19.0–58.0)
FTND score	3.0 (0.0–10.0)
PSQI score	12.0 (6.0–21.0)
General self-efficacy scale score	64.5 (42.0–85.0)
FTND: Fagerstrom test for nicotine dependence; PSQI: Pittsburgh sleep quality index.	

Regarding self-efficacy related to smoking opinions varied, 55 (22.1%) believed that it increased self-efficacy while most 175 (70.3%) disagreed and others remained undecided 19 (7.6%) ($p = 0.155$).

Smokers had significantly higher PSQI scores compared to non-smokers and former smokers (12.0 [6.0–21.0] vs. 11.0 [6.0–18.0] vs. 11.0 [8.0–17.0], respectively, $p < 0.001$). However, self-efficacy scores did not differ significantly among the groups ($p = 0.431$).

DISCUSSION

This study investigated the relationship between smoking status, sleep quality, and self-efficacy perception among Turkish adults. The key results revealed that smokers had significantly poorer sleep quality compared to non-smokers, with those perceiving smoking as affecting their sleep showing higher PSQI scores. However, no significant association was observed between smoking status and self-efficacy perception. In addition, a strong familial influence was noted, as smokers were more likely to have relatives who smoked. The results of this study align with existing literature, where smokers commonly report impaired sleep quality. Nicotine's stimulant effect disrupts sleep by shortening sleep duration, increasing sleep latency, and reducing sleep efficiency.^[19] Consistent with previous studies conducted in Türkiye, the results of this study emphasize that quitting smoking plays a crucial role in improving sleep quality.^[20,21] Considering the negative effect of smoking on sleep, one can assume that quitting or reducing smoking is essential for sleep health.

In this study, a statistically significant but weak positive correlation was found between nicotine dependence and sleep quality scores, suggesting that higher nicotine dependence is associated with poorer sleep quality. Although the correlation coefficient indicates a weak association, its statistical significance underlines a consistent pattern in the data. This result implies that individuals with higher levels of nicotine dependence may require more targeted interventions that address both addiction and sleep disturbances as part of smoking cessation strategies.

Familial influence emerged as another significant factor. Smokers in this study were more likely to have relatives who smoked, suggesting that family behaviors may normalize smoking and reduce motivation to quit. This result is consistent with literature indicating that family and peer smoking behaviors increase smoking risk, particularly among adolescents.^[22] There is a strong need to support people who want to stop smoking and motivate family members to do so.

Self-efficacy refers to an individual's belief in their ability to accomplish tasks and handle challenges. People with higher self-efficacy tend to persist in achieving goals, while those with lower self-efficacy may give up early due to fear

of failure.^[23] The mean General Self-Efficacy Scale score indicated that participants generally felt confident, though context-specific differences, such as in smoking behavior, may exist.

The link between smoking and self-efficacy remains unclear in the literature. Some studies suggest that non-smokers or former smokers have higher self-confidence, while others find no significant association.^[24,25] Self-efficacy also appears to influence smoking initiation and cessation, with higher levels linked to better cessation outcomes.^[26] In this study, although smokers had slightly higher self-efficacy scores than non-smokers, this difference was not significant. This may be due to smokers' beliefs that smoking reduces stress and enhances concentration and social acceptance, potentially creating barriers to quitting. Targeted interventions addressing these misconceptions may improve self-efficacy and support cessation efforts.

Although the difference between the groups was not significant, smokers who believed that smoking enhanced self-efficacy had lower self-efficacy scores than those who thought otherwise. This suggests that individuals with lower self-efficacy may continue smoking, assuming it boosts their confidence. Such beliefs could serve as psychological barriers to quitting. Therefore, addressing these misconceptions and promoting healthier ways to enhance self-efficacy are essential for effective smoking cessation.

One of the major limitations of this study is that it had a cross-sectional design that hinders the generalization of its results to a large part of the population. Larger-scale studies from various geographical locations could provide more generalizable results. The study data collection tools were based on self-reports: Hence, the data collection is subject to social desirability bias and recall bias. Furthermore, the stress, depression, anxiety, physical activity, malignancies, chronic diseases, and dietary habits of the participants were not controlled, and these are potential factors that could influence the quality of sleep and self-efficacy scores.

CONCLUSION

Based on the results of this study, it can be stated that smoking is associated with poorer sleep quality; however, no significant relationship was observed between smoking status and self-efficacy perception. Since smokers showed poorer sleep quality in this study, family physicians could consider screening for sleep disturbances when providing smoking cessation support. However, interventional studies are needed to determine whether improving sleep hygiene can directly enhance cessation outcomes.

Disclosures

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Authorship Contributions: Concept – I.H.Ö., E.G.; Design – I.H.Ö., E.G.; Supervision – E.G.; Resource – I.H.Ö.; Data collection and/or processing – I.H.Ö.; Analysis and/or interpretation – E.G.; Literature review – I.H.Ö., E.G.; Writer – I.H.Ö.; Critical review – E.G.

REFERENCES

- World Health Organization. WHO report on the global tobacco epidemic, 2023: protect people from tobacco smoke [Internet]. Available at: <https://www.who.int/publications/item/9789240077164>. Accessed March 20, 2024.
- Feldner MT, Babson KA, Zvolensky MJ. Smoking, traumatic event exposure, and post-traumatic stress: A critical review of the empirical literature. *Clin Psychol Rev* 2007;27(1):14-45.
- Truong MK, Berger M, Haba-Rubio J, Siclari F, Marques-Vidal P, Heinzer R. Impact of smoking on sleep macro- and micro-structure. *Sleep Med* 2021;84:86-92.
- Üçkardeş MB, Başpınar MM, Şimşek Ç, Basat O. Effect of Sleep Hygiene Training on Treatment Seeking Smokers with Poor Sleep Quality: A Randomized Controlled Study. *Anatol J Fam Med* 2021;4(1):31-5.
- Leonel LF, Morelhão PK, Tufik S, Andersen ML. Sleep disturbances and nicotine addiction: a bidirectional relationship? *Sleep Breath* 2020;24:1669-70.
- Gibson M, Munafò MR, Taylor AE, Treur JL. Evidence for genetic correlations and bidirectional, causal effects between smoking and sleep behaviors. *Nicotine Tob Res* 2019;21(6):731-8.
- Hu L, Sekine M, Gaina A, Kagamimori S. Association between sleep quality and smoking in Japanese civil servants. *Sleep Biol Rhythms* 2007;5:196-203.
- AlRyalat SA, Kussad S, El Khatib O, Hamad I, Al-Tanji A, Alshneikat M, et al. Assessing the effect of nicotine dose in cigarette smoking on sleep quality. *Sleep Breath* 2021;25:1319-24.
- Ma H, Li X, Zhang M, Liu H, Jin Q, Qiao K, et al. Relationships among smoking abstinence self-efficacy, trait coping style and nicotine dependence of smokers in Beijing. *Tob Induc Dis* 2020;18:1-11.
- Garcia ME, Schmitz JM, Doerfler LA. A fine-grained analysis of the role of self-efficacy in self-initiated attempts to quit smoking. *J Consult Clin Psychol* 1990;58(3):317-22.
- Joseph S, Manafi E, Iakovaki AM, Cooper RJP. Personality, smoking motivation, and self-efficacy to quit. *Pers Individ Differ* 2003;34(5):749-58.
- MacCallum RC, Widaman KF, Zhang S, Hong S. Sample size in factor analysis. *Psychol Methods* 1999;4(1):84.
- Buysse DJ, Reynolds III CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. *Psychiatry Res* 1989;28(2):193-213.
- Ağargün M, Kara H, Anlar O. Validity and Reliability of the Pittsburgh Sleep Quality Index. *Turk J Psychiatry* 1996;7(2):107-11.
- Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerström test for nicotine dependence: a revision of the Fagerstrom Tolerance Questionnaire. *Br J Addict* 1991;86(9):1119-27.
- Uysal MA, Kadakal F, Karşıdağ C, Bayram NG, Uysal O, Yilmaz V. Fagerstrom test for nicotine dependence: reliability in a Turkish sample and factor analysis. *Tuberc and Thorax* 2004;52(2):115-21.
- Sherer M, Adams CH. Construct validation of the self-efficacy scale. *Psychol Rep* 1983;53(3):899-902.
- Yıldırım F, İlhan İÖ. Validity and reliability study of the Turkish form of the general self-efficacy scale. *Turk J Psychiatry* 2010;21(4):301-8.
- Jaehne A, Unbehauen T, Feige B, Lutz UC, Batra A, Riemann D. How smoking affects sleep: a polysomnographical analysis. *Sleep Med* 2012;13(10):1286-92.
- Başpınar MM. Türkiye’de Yapılan Tez Çalışmalarında Sigara İçiminin Uyku Kalitesi Üzerine Etkisinin Değerlendirilmesi: Meta-analiz. *J Turk Sleep Med* 2021;8(1):7-14.
- Rujnan T, Çaykara B, Sağlam Z, Pençe HH. Sigara bağımlılarında depresyon, anksiyete, uykululuk ve uyku kalitesi düzeyleri arasındaki ilişkinin belirlenmesi. *Acıbadem Univ Sağlık Bilim Derg* 2019;4(4):609-15.
- Wang J-W, Cao S-S, Hu R-Y. Smoking by family members and friends and electronic-cigarette use in adolescence: A systematic review and meta-analysis. *Tob Induc Dis* 2018;16:1-11.
- Aypay A. The adaptation study of General Self-Efficacy (GSE) Scale to Turkish. *Inonu Univ J Fac Educ* 2010;11(2):113-31.
- Warner LM, Stadler G, Lüscher J, Knoll N, Ochsner S, Hornung R, et al. Day-to-day mastery and self-efficacy changes during a smoking quit attempt: Two studies. *Br J Health Psychol* 2018;23(2):371-86.
- Gwaltney CJ, Metrik J, Kahler CW, Shiffman S. Self-efficacy and smoking cessation: a meta-analysis. *Psychol Addict Behav* 2009;23(1):56.
- Muench C, Malloy EJ, Juliano LM. Lower self-efficacy and greater depressive symptoms predict greater failure to recover from a single lapse cigarette. *J Consult Clin Psychol* 2020;88(10):965.