Доклади на Българската академия на науките
Comptes rendus de l'Académie bulgare des Sciences

Tome 78, No 10, 2025

MEDICINE

Public health

THE NEXUS BETWEEN SOCIAL MEDIA ADDICTION, SLEEP QUALITY, AND LIFE SATISFACTION AMONG MEDICAL STUDENTS: CROSS-SECTIONAL STUDY

Necati Bükecik[1]✉, Filiz Adana[2]

Received on April 14, 2025
Presented by D. Damianov, Member of BAS, on July 29, 2025

Abstract

This study aims to address a gap in the literature by analyzing the relationships between social media addiction, sleep quality, and life satisfaction, particularly in medical students who are under significant stress. This research employed a cross-sectional design at a university medical faculty. The study population included 1210 students, with a minimum sample size calculated as 292 based on a 95% confidence level and a 5% margin of error. Data were collected voluntarily from 433 students using validated tools, including the Social Media Addiction Scale-Adult Form (SMAS-AF), the Life Satisfaction Scale (LSS), and the Republic Subjective Sleep Quality Scale. Statistical analyses included descriptive statistics, Independent Samples t-tests, Kruskal–Wallis, Pearson correlation, and multiple linear regression analysis. Of the participants, 62.4% were female, and 49.4% used social media for 2–4 h daily. A significant negative relationship was identified between social media addiction and life satisfaction ($p < 0.05$), while a positive relationship was found between sleep quality and life satisfaction ($p < 0.05$). Social media addiction negatively affected life satisfaction by disrupting sleep patterns, while sleep quality partially mitigated this adverse effect. Female students exhibited higher social media addiction and life satisfaction scores than male students ($p < 0.05$). Students who used social media for more than 4 h daily reported significantly lower life satisfaction. Social media addiction significantly reduced life satisfaction among medical students, mainly by disrupting sleep quality. However, better sleep

https://doi.org/10.7546/CRABS.2025.10.14

quality seemed to buffer this effect. These findings underscore the need for university programmes to reduce excessive social media use and promote healthy sleep routines. Training that fosters regular sleep habits may further support students' academic and psychological well-being. Still, the results should be interpreted with caution due to limitations such as the single-institution setting, cross-sectional design, and reliance on self-reported data, which may introduce response bias. Future research should adopt multi-centre, longitudinal designs to improve generalizability and causal understanding.

Key words: addiction, life satisfaction, medical students, sleep quality, social media

Introduction. This study explores the effects of social media addiction and sleep quality on medical students' life satisfaction. In the digital era, social media strongly influence psychological, social, and academic life, often disrupting sleep and lowering well-being. Bulduk and Can [1] found that 99.5% of students used social media, with 85.1% preferring Instagram, and higher daily use (1–3 h) linked to greater addiction scores. Such findings underscore the prevalence of social media addiction among university students.

Excessive use is linked to attention deficits, anxiety, sleep disorders, and health problems [2]. These risks are more evident in medical students, who face intense workloads and stress. Uygun and Nur [3] reported that nearly half of the experienced sleep problems were directly related to social media use. Prior studies confirm that poor sleep reduces life satisfaction, with addiction and disturbed sleep reinforcing one another [4, 5]. The negative impact of social media on loneliness, depression, and life satisfaction is increasingly recognized as a public health issue. Bayrakdaroğlu et al. [2] found 60% of students exhibited addiction symptoms, which reduced life satisfaction. Yet, few studies examine addiction, sleep, and life satisfaction together. Research on medical students – already under academic and emotional pressure – can therefore fill this gap. While most studies assess social media and sleep separately, their joint effects on life satisfaction remain underexplored. Given the demands of medical education, addressing these variables together is essential for understanding their implications for well-being and professional performance.

Research questions.

1. What are the levels of social media addiction, sleep quality, and life satisfaction among medical students?

2. Is there a relationship between social media addiction and sleep quality?

3. Is there a relationship between social media addiction and life satisfaction?

4. Is there a relationship between sleep quality and life satisfaction?

5. How do social media addiction and sleep quality jointly affect life satisfaction?

Materials and methods. ***Research design.*** This cross-sectional, quantitative study investigated the relationships among social media addiction, sleep quality, and life satisfaction in medical students.

Population and sample. The study population consisted of 1210 students enrolled in the Faculty of Medicine at Bolu Abant İzzet Baysal University. Using a 95% confidence level and a 5% margin of error, the required sample size was estimated at 292. Ultimately, 433 students participated voluntarily, representing 44.8% of the population and exceeding the calculated requirement, thereby ensuring adequate statistical power. Exclusion criteria included students not using social media, incomplete or invalid surveys, and students enrolled in faculties other than Medicine.

Data collection tools. Four instruments were used for data collection:

- *Personal information form.* Collected demographic data such as age, gender, and daily social media usage.
- *Social Media Addiction Scale–Adult Form* (*SMAS-AF*). A 20-item, five-point Likert scale assessing cognitive, emotional, and behavioural aspects of social media addiction. Higher scores indicate higher addiction levels. In this study, Cronbach's alpha was 0.87.
- *Life Satisfaction Scale* (*LSS*). A five-item Likert scale measuring overall life satisfaction (score range 5–25). Higher scores reflect greater satisfaction. Cronbach's alpha was 0.76.
- *Republic subjective sleep quality scale.* An 18-item scale rated 0–3, with total scores ranging 0–54. Higher scores indicate poorer sleep quality. Cronbach's alpha was 0.81.

Data collection process. Data were collected online using anonymous, voluntary questionnaires. Incomplete or inconsistent responses, as well as students from faculties other than Medicine, were excluded.

Statistical analysis. Analyses were performed with SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics summarized demographic and study variables. Normality was assessed with the Kolmogorov–Smirnov test. Group comparisons were conducted using Independent Samples t-tests or Kruskal–Wallis tests. Pearson correlation assessed associations, and multiple linear regression identified predictors of life satisfaction. Statistical significance was set at $p < 0.05$.

Ethical principles and safety measures. Institutional permission and ethics approval were obtained from the Bolu Abant Izzet Baysal University Non-

Interventional Clinical Research Ethics Committee (03.12.2024, No. 2024/328). Written informed consent was secured from all participants.

Limitations. Results are limited to one medical faculty and may not be generalizable to all student populations. The cross-sectional design precludes causal inferences.

Results. Among the students participating in the study, 62.4% ($n = 270$) were female and 37.6% ($n = 163$) were male, with a mean age of 19.87 ± 1.74 years. The majority of students (99.8%) were single. Regarding daily social media use, nearly half of the participants (49.4%) reported using social media for 2–4 h per day. In terms of sleep duration, 77.1% ($n = 334$) slept 6–8 h daily, 14.8% ($n = 64$) slept 4–6 h, 6.5% ($n = 28$) slept more than 8 h, and 1.6% ($n = 7$) slept less than 4 h. Additionally, 94.7% ($n = 410$) of the students reported not having any chronic health problems, whereas 5.3% ($n = 23$) stated that they had a chronic health condition. With respect to social media addiction, 89.4% ($n = 387$) of the participants indicated that they were addicted, while 10.6% ($n = 46$) stated that they were not.

Female students had higher Virtual Tolerance Subscale scores, and Life Satisfaction Scale scores than male students. As the duration of social media use increased, the Virtual Tolerance Subscale score, Virtual Communication Subscale score and Total Sleep Quality Score increased. Individuals who slept more than 8 hours a day and used social media for more than 4 hours had higher scores on the Virtual Tolerance Subscale. Smokers had higher Total Sleep Quality Scores than non-smokers. Satisfaction with Life Scale score of smokers was significantly lower than that of non-smokers. Alcohol users reported lower Life Satisfaction Scale scores than non-users.

There was a low level negative correlation between the mean scores of Satisfaction with Life Scale and Social Media Addiction and Sleep Quality Scales. There was no significant relationship between age and Social Media Addiction, Sleep Quality and Life Satisfaction Scales.

In this study, the predictive roles of gender, smoking and alcohol use, subdimensions of social media addiction, and sleep quality on life satisfaction were examined using multiple linear regression analysis. The model was significant, $F(6.422) = 7.067$, $p < 0.001$, and explained 11% of the variance in life satisfaction (Adjusted $R^2 = 0.097$). Sleep quality was a significant negative predictor of life satisfaction ($\beta = -0.237$, $p < 0.001$), indicating that poorer sleep quality was associated with lower life satisfaction. Similarly, virtual tolerance (i.e., social media-related irritability) negatively predicted life satisfaction ($\beta = -0.140$, $p = 0.019$). Gender was also a significant predictor ($\beta = 0.099$, $p = 0.042$), with female participants reporting higher life satisfaction compared to males. Although smoking and alcohol use had positive coefficients, they were not statistically significant predictors ($p > 0.05$). The virtual communication subdimension also did not play a significant role in predicting life satisfaction ($p = 0.567$). All variables had VIF values below 2, indicating that multicollinearity was not a concern.

Table 1

Comparison of participants' personal characteristics with social media addiction, sleep quality, and life satisfaction score averages

Variables	*n*	%	Virtual tolerance subscale (X±SS)	Virtual communication subscale (X±SS)	Subjective sleep quality scale (X±SS)	Life satisfaction scale (X±SS)	Test, *p*
Gender							
Female	270	62.4	33.40±7.21	21.01±5.66	31.51±7.42	15.72±3.14	
Male	163	37.6	31.18±7.42	20.66±6.00	30.59±7.64	15.01±3.65	3.070;0.002 / 0.624;0.533 / 1.234;0.218 / 2.141;0.033
Daily social media usage duration							
< 1 h	17	3.9	22.59±8.12	16.47±6.73	26.47±5.80	16.24±3.21	
1–2 h	114	26.3	29.02±6.65	19.78±6.28	30.02±7.83	15.54±3.44	
2–4 h	214	49.4	33.41±6.45	20.97±5.34	31.46±7.37	15.57±3.17	
> 4 h	88	20.3	37.05±6.30	22.93±5.22	32.83±7.21	14.90±3.70	83.198;0.001 / 24.131;0.001 / 15.678;0.001 / 4.098;0.251
Daily sleep duration							
< 4 h	7	1.6	32.86±7.34	21.86±6.15	31.71±6.99	15.00±3.11	
4–6 h	64	14.8	31.59±7.63	20.42±6.24	31.84±7.44	15.41±4.05	
6–8 h	334	77.1	32.30±7.12	20.92±5.74	31.03±7.56	15.46±3.25	
> 8 h	28	6.5	37.89±7.79	21.18±5.42	31.07±7.40	15.68±3.08	12.363;0.006 / 0.487;0.922 / 0.277;0.964 / 0.320;0.956
Chronic health issue							
Present	23	5.3	33.17±8.33	22.00±6.57	30.91±10.09	16.17±3.87	
Absent	410	94.7	32.53±7.31	20.82±5.74	31.18±7.35	15.41±3.33	0.405;0.685 / 0.954;0.341 / 0.163;0.871 / 1.056;0.292
Smoking usage							
Present	75	17.3	31.76±7.08	21.01±5.93	33.25±7.07	14.37±3.30	
Absent	358	82.7	32.74±7.42	20.85±5.76	30.72±7.53	15.68±3.33	1.046;0.296 / 0.219;0.826 / 2.672;0.008 / 3.099;0.002
Alcohol consumption							
Present	67	15.6	31.93±6.82	21.07±5.83	32.03±7.41	14.64±3.60	
Absent	362	84.4	32.67±7.49	20.84±5.81	31.01±7.55	15.62±3.30	0.759;0.448 / 0.307;0.759 / 1.014;0.311 / 2.195;0.029

*Student *t*-test, **Kruskal–Wallis test, $p < 0.05$

Table 2

Comparison of the mean scores of participants' Age, Satisfaction with Life, Social Media Addiction and Sleep Quality

Variables		Social media addiction scale Virtual tolerance subscale		Social media addiction scale Virtual communication subscale		Subjective sleep quality scale		Age
Age	r	−0.025	r	0.021	r	−0.057		
	p	0.603	p	0.666	p	0.239		
Life	r	−0.164	r	−0.114	r	−0.269	r	−0.027
satisfaction scale	p	0.001	p	0.017	p	0.000	p	0.582

Pearson correlation test, $p < 0.05$

Table 3

Multiple linear regression results (Dependent variable: Life satisfaction)

Independent variable	B (β)	Std. error	Beta (Standardized)	t	p-value	VIF
(Constant)	19.116	0.955	—	20.022	< 0.001	—
Overall sleep quality	−0.106	0.022	−0.237	−4.846	< 0.001	1.129
Virtual tolerance	−0.064	0.027	−0.140	−2.356	0.019	1.677
Virtual communication	0.019	0.034	0.034	0.573	0.567	1.631
Gender (Female=1)	0.688	0.338	0.099	2.038	0.042	1.123
Smoking (Non-smoker=1)	0.712	0.490	0.080	1.452	0.147	1.428
Alcohol (Non-drinker=1)	0.344	0.495	0.037	0.695	0.487	1.358

Model Summary: $R = 0.331$, $R^2 = 0.110$, Adj. $R^2 = 0.097$, F(6.422) is significant, $p < 0.001$
Durbin–Watson: 2.028 (assumption of independence met)

Discussion. This study examined the relationships between social media addiction, sleep quality, and life satisfaction among medical students, providing insights into a high-stress subgroup. Nearly half reported 2–4 h of daily use, with prolonged use linked to higher "Virtual tolerance" and "Psychosomatic effects" scores. These findings align with prior studies connecting excessive use to loneliness and anxiety [6, 7]. By including subscales, this study extends beyond usage duration, showing that psychological impacts better capture addiction severity.

Life satisfaction was significantly lower among students using social media for more than four hours daily, supporting evidence that excessive use undermines real-life social ties [8–10]. Importantly, sleep quality emerged as a mediating factor: poor sleep was strongly associated with lower life satisfaction ($\beta = -0.229$, $p < 0.001$), consistent with prior work [11, 12], but extending findings beyond pandemic-related stressors.

Gender-based differences were also evident. Female students scored higher on emotional investment-related subscales, consistent with Felice et al. [13],

but differed from studies reporting no gender effect [14]. Smoking and alcohol consumption were linked to lower life satisfaction and psychosomatic complaints, echoing earlier findings [15, 16]. However, addiction scores did not significantly differ by substance use, suggesting these behaviours exert independent negative effects [17].

Regression analysis indicated that addiction and sleep quality explained only $\sim 10\%$ of life satisfaction variance, pointing to unmeasured factors such as stress or mental health. In line with recent studies [18–20], digital health literacy appears protective by enabling healthier online behaviours. Integrating digital literacy training into medical curricula may thus foster resilience and healthier media use.

Overall, the results emphasize the combined effects of excessive social media use, poor sleep, and unhealthy habits on psychological well-being. They highlight practical implications for institutions, where interventions should include sleep hygiene promotion, digital literacy education, and psychosocial support. Gender-sensitive approaches and campaigns targeting smoking and alcohol use could enhance effectiveness.

Conclusions and recommendations. This study provides an in-depth evaluation of the relationships between social media addiction, sleep quality, and life satisfaction among medical students. Findings show that social media addiction negatively affects psychosocial well-being, not only by reducing life satisfaction directly but also by impairing sleep quality, which emerged as a significant mediating factor.

Gender-based differences were observed: female students were more vulnerable to addiction yet reported higher life satisfaction, indicating distinct psychological outcomes. Unhealthy habits such as smoking and alcohol use compounded psychosomatic complaints and further lowered life satisfaction. Excessive social media use also heightened loneliness, which acted as both a direct and indirect pathway to diminished life satisfaction.

These results underline social media addiction as a critical issue at individual, academic, and societal levels. Universities should develop awareness programmes, regulate nighttime social media use, and promote sleep hygiene. Strengthening psychosocial support mechanisms, alongside targeted campaigns addressing smoking and alcohol, could mitigate additional risks. Moreover, integrating digital health literacy into medical curricula may enhance students' resilience and foster healthier digital behaviours. Future multi-centre and longitudinal research is recommended to generalize findings and strengthen causal understanding.

REFERENCES

[1] Bulduk M., V. Can (2022) A study on social media addiction: An example of university students and vocational high school students, Bebek Çocuk Ergen Sağlığı Dergisi, **2**(2), 107–117, (in Turkish).

[2] Bayrakdaroğlu Y., M. U. Türkmen, Y. Öntürk (2023) Investigation of the relationship between university students' social media addiction and life satisfaction levels, Akdeniz Spor Bilimleri Dergisi, **6**(4), 1209–1222, https://doi.org/10.38021/asbid.1345259, (in Turkish).
[3] Uygun T., N. Nur (2024) The relationship between internet addiction level and sleep disorders among first-, second- and third-year students of Sivas Cumhuriyet University Faculty of Medicine, and related factors, Cumhuriyet Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi, **9**(2), 158–167, https://doi.org/10.51754/cusbed.1427730, (in Turkish).
[4] Garett R., S. Liu, S. D. Young (2018) The relationship between social media use and sleep quality among undergraduate students, Inf. Commun. Soc., **21**(2), 163–173, https://doi.org/10.1080/1369118X.2016.1266374.
[5] Koçak Ç. V., S. Şimşek (2023) The relationship between social media consumption and sleep quality in athletes, Online Rekreasyon ve Spor Dergisi, **12**(4), 759–765, https://doi.org/10.22282/tojras.1318963, (in Turkish).
[6] Kircaburun K., M. D. Griffiths (2019) Problematic Instagram use: The role of perceived feeling of presence and escapism, Int. J. Ment. Health Addict., **17**, 909–921, https://doi.org/10.1007/s11469-018-9895-7.
[7] Ostinelli E. G., C. Zangani, B. Giordano et al. (2021) Depressive symptoms and depression in individuals with internet gaming disorder: A systematic review and meta-analysis, J. Affect. Disord., **284**, 136–142, https://doi.org/10.1016/j.jad.2021.02.014.
[8] Ye Y., H. Wang, L. Ye, H. Gao (2024) Associations between social media use and sleep quality in China: Exploring the mediating role of social media addiction, Int. J. Ment. Health Promot., **26**(5), 361–376, https://doi.org/10.32604/ijmhp.2024.049606.
[9] Korkmaz Z., İ. Çiçek, M. Yildirim, F. Ünsal (2023) The relationship between social media addiction and sleep quality: The impact of the virtual world on adolescents, Yaşadıkça Eğitim, **37**(3), 844–856, https://doi.org/10.33308/26674874.2023373654, (in Turkish).
[10] Tuncay P. Y., K. Eren Bozdoğan, E. Bozdoğan (2023) Investigation of the relationship between digital game addiction and family communication among adolescents, J. Res. Educ. Sci. (JRES), **10**(2), 177–195, https://doi.org/10.51725/etad.1334923, (in Turkish).
[11] Boursier V., F. Gioia, A. Musetti, A. Schimmenti (2020) Facing loneliness and anxiety during COVID-19 isolation: The role of excessive social media use in a sample of Italian adults, Front. Psychiatry, **11**, 586222, https://doi.org/10.3389/fpsyt.2020.586222.
[12] Alimoradi Z., C. Y. Lin, A. Broström et al. (2019) Internet addiction and sleep problems: A systematic review and meta-analysis, Sleep Med. Rev., **47**, 51–61, https://doi.org/10.1016/j.smrv.2019.06.004.
[13] Felice G., J. Burrai, E. Mari et al. (2022) How do adolescents use social networks and what are the potential dangers? A qualitative study on gender differences, Int. J. Environ. Res. Public Health, **19**(9), 5691, https://doi.org/10.3390/ijerph19095691.
[14] Elsel H., N. Onan (2021) Examination of the relationship between self-perception and social media attitude in adolescents, Ünika Sağlık Bilimleri Der-

gisi, **1**(3), 129–143, https://dergipark.org.tr/tr/download/article-file/3239211 (in Turkish with English summary).
[15] Kaplan A., C. Özdemir (2023) The impact of social media accumulation on communication skills and academic success in nursing, İnönü Üniversitesi Sağlık Hizmetleri Meslek Yüksekokulu Dergisi, **11**(1), 1344–1357, https://doi.org/10.33715/inonusaglik.1155787, (in Turkish).
[16] Çağlayan M. T., H. Arslantaş (2023) Factors representing social media individuals at university and the relationship between social media, vulnerability and fear of hiding, Bağımlılık Dergisi, **24**(3), 334–348, https://doi.org/10.51982/bagimli.1191206, (in Turkish).
[17] Bulut İ., C. Arslan (2024) The relationship between tobacco use, emotion regulation difficulties, and psychological well-being, Curr. Addict. Res., **8**(1), 34–44, (in Turkish).
[18] Norman C. D., H. A. Skinner (2006) eHealth literacy: Essential skills for consumers' health in a networked world, J. Med. Internet Res., **8**(2), e9, https://doi.org/10.2196/jmir.8.2.e9.
[19] Dadaczynski K., O. Okan, M. Messer et al. (2021) Digital health literacy and web-based information-seeking behaviors of university students in Germany during the COVID-19 pandemic: Cross-sectional survey study, J. Med. Internet Res., **23**(1), e24097, https://doi.org/10.2196/24097.
[20] Bouclaous C., A. Al Kamand, R. Daher et al. (2023) Digital health literacy and online information-seeking behavior of Lebanese university students during the COVID-19 pandemic and infodemic, Nord. J. Digit. Lit., **18**(1), 60–77, https://doi.org/10.18261/njdl.18.1.6.

[1]*Bolu Abant İzzet Baysal University, 14100 Bolu, Türkiye*
e-mail: necati.bukecik@ibu.edu.tr (https://orcid.org/0000-0002-0435-9606)

[2]*Department of Public Health Nursing, Faculty of Nursing, Aydın Adnan Menderes University, Aydın, Türkiye*
e-mail: filiz.adana@adu.edu.tr