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ORIGINAL ARTICLE

The Effect of Social Media Addiction on Premenstruel Syndrome and Sleep Quality

Premenstruel Sendrom ve Uyku Kalitesine Sosyal Medya Bağımlılığının Etkisi

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ABSTRACT

Objective: This study was conducted to determine the impact of social media addiction on premenstrual syndrome (PMS) and sleep quality.
Material-Method: The study population consisted of female students enrolled in the Health Sciences Faculty of a state university (n=884). Data were collected using the "Personal Information Form," "Social Media Addiction Scale (SMAS)," "Premenstrual Syndrome Scale (PMSS)," and "Pittsburgh Sleep Quality Index (PSQI)" instruments. Descriptive statistics, Pearson correlation analysis and Linear Regression Analysis were used for statistical evaluation.
Results: The mean age of the students was 20.40±1.65, and the mean age of menarche was 13.42±1.60. The mean total score for PMSS was 129.57±37.75, the mean total score for SMAS 12.93±4.84, and the mean score for PSQI was 13.22±2.04. The correlation analysis revealed a positive relationship between SMAS and the total scores of PMSS and PSQI (r=.325, p=.000; r=271, p=.000). In addition, as a result of the regression analysis, a 1-unit change in the social media addiction scale score causes a positive increase of .325 units (β) on the total score of the premenstrual syndrome scale and a positive increase of .444 units (β) on the total score of the PSQI.
Conclusion: Social media addiction was found as an effective variable in increasing premenstrual syndrome symptoms and poor sleep quality.

Keywords: Premenstrual Syndrome, Social Media Addiction, Sleep Quality

ÖZ

Amaç: Araştırma sosyal medya bağımlılığının premenstruel sendrom ve uyku kalitesine etkisini belirlemek amacıyla yapılmıştır.
Gereç-Yöntem: Kesitsel olarak yürütülen araştırmanın evrenini bir kamu üniversitesine bağlı Sağlık Bilimleri Fakültesi'nde eğitim gören kız öğrenciler oluşturmuştur (n=884). Araştırma verileri "Kişisel Tanıtım Formu", "Sosyal Medya Bağımlılığı Ölçeği (SMBÖ)", "Premenstruel Sendrom Ölçeği (PMSÖ)", "Pittsburgh Uyku Kalite İndeksi (PUKİ)" araçları ile elde edilmiştir. İstatistiksel değerlendirmede tanımlayıcı istatistikler, pearson korelasyon ve linear regresyon analizi kullanılmıştır.
Bulgular: Öğrencilerin yaş ortalaması 20.40±1.65 ve menarş yaş ortalaması 13.42±1.60'dır. Öğrencilerdeki PMSÖ toplam puan ortalaması 129.57±37.75, SMBÖ toplam puan ortalaması 12.93±4.84, SMBÖ puan ortalaması 13.22 ± 2.04''dir. Korelasyon analizi sonucunda SMBÖ ile PMSÖ ve PUKİ toplam puan ortalamaları arasında pozitif yönde bir ilişki olduğu saptanmıştır (r=.325 p=.000; r=271, p=.000). Ayrıca yapılan regresyon analizi sonucunda sosyal medya bağımlılığı ölçeği puanındaki 1 birimlik bir değişim premenstrual sendrom ölçeği toplam puanı üzerinde pozitif yönde .325 birimlik (β), PUKİ toplam puanı üzerinde pozitif yönde .444 birimlik (β) bir artışa neden olmaktadır.
Sonuç: Sosyal medya bağımlılığının premenstrual sendrom semptomlarını ve kötü uyku kalitesini arttırmada etkili bir değişken olduğu belirlenmiştir.

Anahtar Kelimeler: Premenstruel Sendrom, Sosyal Medya Bağımlılığı, Uyku Kalitesi

Introduction

Social media enables individuals to establish connections and make friends through existing social networks without geographical, cultural, and time constraints. However, problematic social media use can have a negative impact on an individual's psychosocial well-being and overall happiness (1, 2). Social media addiction has been the focus of many researchers worldwide and has emerged as a global problem with negative implications for human health (2,3). According to the 2022 report by We Are Social, 58.4% of the world's population, which is equivalent to 4.62 billion people, has been identified as active social media users. This represents a 10% increase compared to the previous year (4). The use of social media has been associated with various physical, psychological and mental health issues such as anxiety (5), stress (6), depression (7), emotional exhaustion (8), low self-esteem (9) and poor sleep quality (10). As a result, many studies in the literature emphasize the negative effects of social media addiction on human health and highlight it as a factor that needs to be addressed (11-13). It is necessary to combat social media addiction based on the findings of these studies. Human health is considered as a state of overall well-being, encompassing both physical and psychological aspects. In the context of maintaining a healthy society and the well-being of future generations, the health status of women needs to be specifically evaluated (14). Menstruation period holds significant importance in a substantial part of women's health. Women can

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encounter various physiological, psychological, and social problems before menstruation. Premenstrual syndrome (PMS), which begins in the luteal phase of the menstrual cycle and decreases with menstrual bleeding, is believed to trigger and even intensify a woman's general mood, appetite changes, social life, and sleep among many other parameters (15). The prevalence of premenstrual syndrome (PMS) in the world is between 47% and 85% (16). According to studies conducted in Türkiye, the prevalence of PMS is between 23% and 70% (17-19). Within the multifaceted variables examined in PMS, the prevalence of poor sleep quality due to sleep problems varies between 29% and 75% (20-22).

In today's world, experiencing sleep problems or disruptions in sleep quality has become an increasingly prevalent issue. Sleep is influenced by various factors such as age, gender, emotional state, physical activity intensity, diet, lifestyle, harmful habits and medication usage (23-25). Additionally, poor sleep quality and insufficient sleep can lead to problems that negatively affect daily life, such as difficulties in concentration, anxiety disorders, impairment in physical functioning, fatigue, exhaustion, and excessive irritability (26, 27). Indeed, sleep quality is of utmost importance for maintaining and preserving an individual's health (28). Jehan et al. examined the relationship between sleep and premenstrual syndrome, finding that sleep problems and premenstrual symptoms were cyclical triggers (21). Kaur et al. conducted a systematic analysis revealing that social media addiction negatively affected sleep quality (29). Additionally Alonzo et al. conducted a systematic analysis and determined that social media addiction had a negative effect on sleep quality and mental health (30). While the negative effects of social media addiction have been discussed in many ways, no research that examines the combined effect on premenstrual syndrome and sleep quality has been found.

Therefore, the aim of this study is to determine the effects of social media addiction on PMS and sleep quality, and to contribute to the relevant literature. The research question is: Does social media addiction affect premenstrual syndrome and sleep quality?

Materials and Methods

Study Design

The study has a cross-sectional design.

Participant and Sampling

The population of the research consisted of 981 female students enrolled in the Faculty of Health Sciences of a state university. No sampling technique was used, and the aim was to reach the entire population. However, the research was completed with 884 voluntary female students. The study's power was determined as 98% using the G*Power 3.1.9.2 program.

The research data were collected between August and October 2022.

Inclusion criteria

• Having an internet-connected electronic device.

Exclusion criteria

• Marking the same option throughout the entire survey or leaving it incomplete.

Data Collection Tools

The research data were obtained using the following instruments: "Personal Identification Form," "Social Media Addiction Scale (SMAS)," "Premenstrual Syndrome Scale (PMS)," and "Pittsburgh Sleep Quality Index (PSQI)."

Personal Identity Form

The Personal Identification Form consists of 12 qualitative questions prepared by the researchers in accordance with the literature (31-34) to inquire about socio-demographic characteristics and digital device usage habits.

Social Media Addiction Scale (SMAS)

The Social Media Addiction Scale (SMAS) was developed by Günüç and validated by Günüç (35) as a revised version of the Internet Addiction Scale, specifically focusing on the "impairment in functionality" subscale, with the term "internet addiction" revised to "social media addiction" (11). The scale is a 5-point Likert-type scale. The evaluation of the scale is based on the average scores of the items, and an increase in the obtained score indicates a higher level of social media addiction. The scale ranges from a minimum of 7 to a maximum of 35 points, with higher scores indicating higher levels of addiction. The Cronbach's Alpha coefficient for the social media addiction scale was .85 in the original study, and in this research, it was determined as .87, indicating high internal consistency.

Premenstrual Syndrome Scale (PMSS)

The scale used to determine premenstrual symptoms and their severity, developed by Gençdoğan and validated, consists of 44 items on a 5-point Likert-type scale (35). The scale comprises nine subscales, which are depressive mood, anxiety, irritability, fatigue, depressive thoughts, pain, appetite changes, and bloating. The lowest possible score that can be obtained from these nine subscales is 44, while the highest score is 220. When the total PMSS score is higher than 50%, that is, an individual with 111 points or more is considered to have PMS. A higher score indicates a higher intensity of premenstrual symptoms. The Cronbach's Alpha coefficient for the scale was .75 in the original study, and in this research, it was determined as .97, indicating high internal consistency.

Pittsburgh Sleep Quality Index (PSQI)

The Pittsburgh Sleep Quality Index (PSQI) was developed by Buysse et al. in 1989 (36). In Türkiye, Ağargün, Kara and Anlar conducted a study on the validity and reliability of the scale, which evaluates the sleep quality over the past month. The scale consists of

19 items and 24 questions (37). PSQI assesses subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction, comprising seven different subscales. The scores from these seven components are summed to obtain the scale score. The maximum score that can be obtained from the scale is 21. A score higher than 5 indicates poor sleep quality (36, 37). The Cronbach's Alpha coefficient for the scale was .80 in the study conducted by Ağargün, Kara and Anlar and in this research, it is .78.

Data Collection

Female students who are currently enrolled in the Faculty of Health Sciences were invited to participate in this study on a voluntary basis. The research data were collected by the researchers through Google Forms. The data obtained through Google Forms were archived digitally. Before starting to fill out the forms, participants were provided with an informed consent form on the digital platform, which they read and confirmed their consent. It took approximately 5-10 minutes to complete the form.

Data Analysis

The data obtained from the research were analyzed using IBM SPSS Statistics for Windows, Version 22.0 (38). The normality of the data was checked using the Kolmogorov-Smirnov test (39). The skewness value for the model was between -2 and +2, which is within the range of values that would be expected for a normally distributed data set. Therefore, the data set has a normal distribution. Descriptive statistical analyses such as frequency distribution, mean, and standard deviation were conducted. Additionally, Pearson Correlation Analysis and Linear Regression analysis were performed. A significance level of $p<.05$ was considered as statistically significant.

Ethical Considerations

The research was conducted with the approval of the ethics committee (Decision No: 2022/3750) and necessary consent from the relevant institution was obtained. Participants were informed about the research and only individuals who voluntarily agreed to participate were included in the study.

Results

Some sociodemographic and menstrual cycle characteristics of the participants are presented in Table 1. The mean age of the participants was 20.40 ± 1.65 years, the mean age at menarche was 13.42 ± 1.60 years, the mean menstrual cycle length was 29.0 ± 6.87 days, and the mean number of bleeding days was 5.6 ± 1.96 days. It was determined that 80.3% of the participants had a nuclear family structure, 57% lived in a city, 71.7% had a middle perceived income status, and 83% did not exercise for 3 or more days per week. 74.9% of the participants had regular menstrual cycles and 83.9% did not have a psychiatric disorder (Table 1).

Table 1. Distribution of socio-demographic and obstetric characteristics of the participants (n=884)

Variable	**Mean±SD**	
Age	20.40±1.65	
Age of menarch	13.42±1.60	
Menstrual cycle (days)	29.0±6.87	
Number of days with menstrual bleeding	5.6±1.96	
BMI	21.667	
	n	%
Family type		
Nuclear familiy	710	80.3
Extended familiy	144	16.3
Divorced family	30	3.4
Working status		
Working	24	2.7
Not working	860	97.3
Living place		
Province	504	57.0
District	236	26.7
Village-Town	144	16.3
Marital status		
Married	6	0.7
Single	878	99.3
Income situation		
Low	224	25.3
Middle	634	71.7
High	26	3.0
The regularity of menstruation		
Regular	662	74.9
Irregular	222	25.1
PMS status		
Yes	315	28.9
No	128	71.1
Total	884	100

SD: Standart Deviation, **BMI:** Body Mass Index

The mean total score of the participants in the SMAS was 12.93 ± 4.84, the mean total score in the PMSS was 129.57 ± 37.05, and the mean total score in the PSQI was 13.22 ± 2.04 (Table 2).

Table 2. Distribution of the total mean scores of the participants from the scales

Variable	Lowest-highest value receivable	Received mean score (Mean± SD)
SMAS Total	7-35	12.93±4.84
PMSS Total	44-220	129.57±37.05
PSQI Total	0-21	13.22 ± 2.04

SMAS: Social Media Addiction Scale; **PMSS:** Premenstrual Syndrome Scale; **PSQI:** Pittsburg Sleep Quality Index; **SD:** Standart Deviation

A statistically significant positive relationship was found between SMAS and the total and subscale scores

of PSQI and PMSS (Table 3). The average time to fall asleep for the participants was 27.74 ± 27.4 minutes and the average sleep duration was 8.01 ± 1.67 hours. A positive relationship was found between the PSQI subscales of daytime dysfunction, subjective sleep quality, sleep disturbance, and habitual sleep pattern sleep delay, and a negative relationship was found between habitual sleep pattern and the total SMAS score. It was determined that there was a statistically significant positive relationship between the mean total scores of all subscales of the PMSS and the SMAS total scores of participants (p <.001) (Table 3).

Table 3. The Relationship Between SMAS Total Score and PSQI and PMSS Sub-Dimensions (n=884)

	SMAS Total Score	
PSQI Total Score and Sub-Dimensions	r	p
Daytime dysfunction	.276**	.000
Subjective sleep quality	.239**	.000
Sleep duration component	.014	.765
Sleep delay	.096*	.044
Sleep disorder	.210**	.000
Use of sleeping pills	.047	.323
Habitual sleep patterns	-.099*	.041
PSQI Total Score	.271**	.000
PMSS Total Score and Sub-Dimensions		
Depressive thoughts	.292**	.000
Anxiety	.250**	.000
Fatigue	.281**	.000
Irritability	.322**	.000
Depressive affect	.384**	.000
Pain	.158**	.001
Appetite changes	.194**	.000
Sleep changes	.221**	.000
Swelling	.167**	.000
PMSS Total Score	.325**	.000

r: Pearson correlation; * Correlation is significant at p<.05; ** Correlation is significant at p<.001; **SMAS:** Social Media Addiction Scale; **PMSS:** Premenstrual Syndrome Scale; **PSQI:** Pittsburg Sleep Quality Index

The results of the analyses showed that social media addiction significantly predicted premenstrual syndrome and its subscales, as well as the total PSQI score. The R2 values for the models showed that social media addiction could explain 8.5% of the variance in the depressive mood subscale, 6.2% of the variance in the anxiety subscale, 7.9% of the variance in the fatigue subscale, 10.4% of the variance in the irritability subscale, 14.8% of the variance in the depressive thoughts subscale, 2.5% of the variance in the pain subscale, 3.7% of the variance in the appetite changes subscale, 4.9% of the variance in the sleep changes subscale, 2.8% of the variance in the bloating subscale and approximately 10.6% of the variance in PMSS overall. Social media addiction could also explain 19.7% of the variance in the total PSQI score.

Based on the regression models, it can be inferred that a unit increase in the social media addiction scale score leads to a significant and positive effect on various dimensions. Specifically, there is a notable 29.2% increase in the score of the Depressive Mood subscale, a 25% increase in the score of the Anxiety subscale, a significant 28.1% increase in the score of the Fatigue subscale, a considerable 32.2% increase in the score of the Irritability subscale, a substantial 38.4% increase in the score of the Depressive Thoughts subscale, a moderate 15.8% increase in the score of the Pain subscale, a notable 19.4% increase in the score of the Appetite Changes subscale, a significant 22.1% increase in the score of the Sleep Changes subscale, a considerable 16.7% increase in the score of the Bloating subscale, a substantial 32.5% increase in the overall score of the PMSS and a substantial 44.4% increase in the overall score of the PSQI. The significance of the regression coefficients, as determined by t-tests, indicates a meaningful and positive association between social media addiction and both the total and subscale scores of PMSS, as well as the overall sleep quality assessed by PSQI (Table 4).

Table 4. Linear Regression Analysis Results Related to SMAS and PSQI-PMSS and its Subscales

Scales		B	t	β	R^2	F	p
SMAS	Depressive affect	.428	6.401	.292	.085	40.977	.000*
	Anxiety	.353	5.413	.250	.062	29.303	.000*
	Fatigue	.357	6.131	.281	.079	37.589	.000*
	Irritability	.367	7.111	.322	.104	50.532	.000*
	Depressive thoughts	.575	8.721	.384	.148	76.054	.000*
	Pain	.099	3.356	.158	.025	11.262	.000*
	Appetite changes	.141	4.137	.194	.037	17.117	.000*
	Sleep changes	.145	4.757	.221	.049	22.633	.000*
	Swelling	.126	3.544	.167	.028	12.563	.000*
	PMSS Total score	2.507	7.169	.325	.106	51.388	.000*
	PSQI Total score	.025	10.314	.444	.197	106.384	.000*

SMAS: Social Media Addiction Scale; **PMSS:** Premenstrual Syndrome Scale; **B:** Unstandardized Beta Coefficient; β: Standardized Beta Coefficient; **R2:** Explanatory Coefficient, * Correlation is significant at p<.001; **t test** result for the significance of regression coefficients and **F test** result for the significance of the model

Discussion

Social media addiction has been interpreted as a significant global issue in terms of human health and social well-being in numerous studies and published reports (40). While there are many studies in the literature focusing on the relationship between this global problem and sleep issues or sleep quality, no studies examining its association with PMS have been found. This research investigates the impact of social media addiction on PMS and sleep quality, and the obtained results are discussed in line with the relevant literature.

Research studies indicate that sleep quality is progressively declining among young adults.

Academic and social pressures, irregular schedules and various entertainment opportunities can lead to sleep disorders and sleep deprivation in students (41). In fact, insufficient or poor sleep quality negatively affects educational performance (42). In this study, the average total score of the PSQI obtained from the participants is 13.22 ± 2.04, indicating poor sleep quality among the participants. In a study conducted on Nigerian students, the average PSQI total score was 5.83±2.97 (43), while American college students had an average PSQI score of 5.64±2.79 (44). Another study examining sleep quality in university students reported an average PSQI score of 7.0±3.1 (45). Studies conducted in Türkiye also revealed average PSQI scores of 8.95±2.69 and 7.32±2.8 (46, 47). The findings of this study are higher than those reported in the literature, which can be attributed to the fact that all the data were collected from students in the health department. The Faculty of Health Sciences has intensive programs consisting of practical and theoretical courses. Considering the significant impact of poor sleep quality on physical and mental health, it is recommended that students should be provided with education on time management and establish units that can provide continuous support throughout the academic year.

PMS is significantly associated with a decline in quality of life, reduced occupational productivity and decreased academic performance (48). In this study, the average total score of the participants on the PMSS is 129.57±37.05. It is evident that the participants are significantly affected by PMS. When looking at similar high-quality studies, the participants' average PMSS total scores were determined as 105.9±49.5 (49), 132.36±36.22 (31), and 89.32±24.82 (50). Our research findings align with the existing literature. This may be attributed to the widespread nature of PMS as a common issue in women's lives across different ethnicities and geographies. The high average PMS scores among university students indicate the need for comprehensive healthcare services.

According to our research findings, the average total score of the participants on the SMAS is 12.93±4.84. In a study examining social media addiction among participants aged 15 and above, the average social media addiction score was found as 17.11±5.47, with women exhibiting higher addiction levels compared to men (51). Another study conducted on university students, investigating the impact of social media addiction across different cultures, reported an average total score of 14.77±4.13 on the social media addiction scale (52). In this context, our research findings comply with the existing literature, which indicates that social media addiction levels are moderate. This similarity may be attributed to the comparable age ranges of the study populations.

Sleep quality is important for everyone. Quality sleep helps maintain heart health, prevents cancer, reduces stress, enhances memory and so on. However, nowadays people stay up until late hours due to various reasons, which can negatively impact sleep quality. There are many factors that contribute to poor sleep quality, and one significant factor is the use of smartphones, which keep people awake until late hours and affects sleep quality (53). In this study, a statistically significant relationship was found between the participants' total score on the SMAS and the subscales and total score of the PSQI (Table 3, r=.271, p<.001). A study examining the relationship between social media addiction and sleep quality among high school students reported a statistically significant correlation between social media addiction and sleep quality (r=.265, p<.001). Güneş et al. found that as social media addiction increased, sleep quality worsened, which is consistent with our research findings (54).

In a study performed on university students from different cultures, and examined social media addiction, fatigue, academic engagement and sleep quality, it was found that the increase in social media addiction was directly proportional to the deterioration of sleep quality (55). In the study of Güneş et al., significant relationships were identified between social media addiction and all subscales of PSQI (54). Another study with university students found that internet addiction and depressive symptoms mediated the relationship between poor sleep quality (56). In this research, social media addiction was found as an influential variable in daytime dysfunction, subjective sleep quality, sleep delay, sleep disturbance, and disruption of regular sleep patterns (Table 3). Our research findings are consistent with the literature, indicating that regardless of different cultures, social media addiction, which negatively affects sleep quality, has inevitable negative consequences that are shared.

According to the research findings, a statistically significant relationship was found between participants' scores on the SMAS and the PMSS total scores and all sub-dimensions (p<.001, Table 3). Additionally, it was observed that social media addiction has an impact on premenstrual syndrome symptoms, and as social media addiction increases, the average scores for depressive thoughts, anxiety, irritability and depressive mood sub-dimensions also increase (Table 4). A study conducted with young women indicated that social media addiction had a negative effect on loneliness and depression (42). Similarly, a study carried out in China found a positive correlation between internet and social media addiction and fatigue, but the causal relationship between these variables could not be determined (57). Another study of similar nature revealed a relationship between social media addiction and fatigue (58). Studies have indicated that social media addiction can cause pain in the head, neck, and upper extremities (59, 60). However, no research examining the relationship between variables such as dysmenorrhea, appetite changes and bloating with social media addiction has been found.

In addition, the results of the regression analysis showed that a 1-unit change in the SMAS score resulted in a positive increase of .325 (β) in the total PMSS score and

.444 (β) in the total PSQI score (Table 5). This finding suggests that social media addiction is an effective variable in increasing premenstrual syndrome symptoms and poor sleep quality. It is thought that the results of our study will contribute to the literature.

Conclusion

In conclusion, this study, which evaluated social media addiction with a broad sample group, has determined its significant impact on premenstrual syndrome symptoms and sleep quality, which affect various aspects of our lives. This research highlights the importance for policymakers and university administrators to be aware of the issue of social media addiction and provide comprehensive services to university students. Furthermore, it is believed that examining the effects of social media addiction in relation to different aspects of women's health will contribute to the existing literature.

Limitation: The research cannot be generalized to older women because it was conducted specifically on university students.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Author Contributions

Conception: Z.Ö., S.G.S., Y.A.D., Data Collection and Processing: S.G.S., Design: Z.Ö., Supervision: Y.A.D., Analysis and Interpretation: Z.Ö., Literature Review: Z.Ö., S.G.S., Writer: Z.Ö., S.G.S., Y.A.D., Critical Review: Z.Ö., Y.A.D.

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