



# Insomnia in Adults During COVID-19 Pandemic and Its Association with Social Media Addiction

## Yetişkinlerde COVID-19 Döneminde Uykusuzluk (Insomnia) ve Sosyal Medya Bağımlılığı ile İlişkisi

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### Abstract

**Objective:** There are concerns that the use of social media may have increased as a result of the prolonged stay-at-home period to ensure social isolation during Coronavirus disease-2019 (COVID-19), leading to social media addiction, which may cause insomnia. However, studies in this field are limited. Therefore, the main purpose of this study is to eliminate this gap in the literature by examining the cross-sectional and longitudinal relationships between social media addiction and insomnia in adults.

**Materials and Methods:** Data was collected using an online survey administered in February 2021. The questionnaire measured demographic variables, insomnia, social media addiction. The sample in the present study consisted of 405 participants.

**Results:** Insomnia scores were found to be higher in women, singles, unemployed, unborn children, and those who had a relative with COVID-19. Social media addiction is higher in singles, unemployed and those without children. Having a close relative with coronavirus has been associated with social media addiction.

**Conclusion:** Considering the negative impact on insomnia, we recommend taking initiatives to reduce social media addiction.

**Keywords:** Insomnia, social media, addiction, COVID-19

### Öz

**Amaç:** Koronavirüs hastalığı-2019 (COVID-19) döneminde sosyal izolasyonu sağlama amacıyla evde kalma sürelerinin uzaması ile sosyal medya kullanımının artarak sosyal medya bağımlılığına yol açmış olabileceği ve bunun da insomniaya neden olabileceği dair endişeler bulunmaktadır. Bununla birlikte, bu alanda yapılan çalışmalar kısıtlıdır. Bu çalışmanın temel amacı, yetişkinlerde sosyal medya bağımlılığı ve insomnia arasındaki ilişkileri inceleyerek literatürdeki bu boşluğu gidermektedir.

**Gereç ve Yöntem:** Tanımlayıcı kesitsel tipteki bu çalışmada veriler, Şubat 2021'de uygulanan çevrimiçi bir anket kullanılarak toplanmıştır. Anket, demografik değişkenleri, uykusuzluğu, sosyal medya bağımlılığını ölçmüştür. Bu çalışmanın örneklemi 405 katılımcı oluşturmıştır.

**Bulgular:** Kadınlarda, bekarlarda, çalışmayanlarda, çocuğu olmayan ve COVID-19 geçiren yakını olanlarda insomnia puanı daha yüksek düzeyde saptanmıştır. Bekarlarda, çalışmayanlarda ve çocuğu olmayanlarda sosyal medya bağımlılığı daha yüksek düzeydedir. Koronavirüs geçiren bir yakının olması sosyal medya bağımlılığı ile ilişkili bulunmuştur.

**Sonuç:** İnsomnia üzerindeki olumsuz etkisi de düşünüldüğünde sosyal medya bağımlılığını azaltan girişimler yapılması önerilebilir.

**Anahtar Kelimeler:** İnsomnia, social media, addiction, COVID-19

### Introduction

Coronavirus disease-2019 (COVID-19), which first appeared in Wuhan, China, in December 2019, has started to spread rapidly worldwide. On January 30, 2020, it was recognized as a Public Health Emergency by the World Health Organization and declared a pandemic in March (1). As of 10.04.2021, 134,719,328 active patients have been reported. As of 10.04.2021, Turkey ranked seventh in the world with 3,745,657 cases (2).

Symptoms of coronavirus infection include fever, chills, cough, sore throat, myalgia, nausea and vomiting, and diarrhea. Individuals with a history of underlying disease are more likely to be infected with the virus, and worse outcomes can result in heart, respiratory failure, acute respiratory syndrome, and even death (3). Containment measures in the COVID-19 pandemic are focused on identifying, treating, and isolating infected individuals, monitoring and quarantining their close contacts, and promoting precautionary behavior among the

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Received/Geliş Tarihi: 13.01.2022 Accepted/Kabul Tarihi: 06.04.2022

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general population (4). Compulsory lockdown, school closures, and limitations on social venues working hours are among the important measures taken.

Prolonged lockdowns stay shifted the focus of life from social activities to indoor activities, and more sedentary behaviors occurred, for example, internet and social media use (5). Since the time to stay at home increases due to precautions against COVID-19 individuals has more free time than their routine lives, it is thought that individuals will start to spend more time on social media. When using leisure time activities positively, it contributes to the individual, and when used incorrectly, it can cause a decrease in the quality of life of the individual (6). Another reason for the increase in internet and social media use is that individuals want to receive information about COVID-19 (5). Social media addiction can lead to various psychological, physical, and social problems (7). It has been reported that social media addiction can impair sleep quality (8), and insomnia is associated with social media addiction (9).

However, actions such as isolation, physical distance, and quarantine have been reported to cause increased fear, stress, and anxiety among individuals worldwide (10). The direct life-threatening nature of the disease, with a significant number of confirmed cases, has been reported to cause infection anxiety and subsequent sleep problems in the general population (5,11). During the pandemic, many people fear and worry about their own or their loved ones' health, and may have difficulty concentrating and sleeping, due to the potential risk of exposure to COVID-19 infection. (12). Insomnia is the most common sleep disorder characterized by difficulty falling asleep, sleep deprivation, or very early awakening accompanied by daytime disorders/sleepiness (13). In a study conducted in Poland, it was reported that insomnia increased during the compulsory lockdown during the COVID-19 pandemic (14). A study in Italy found a 42.2% insomnia rate in the general population during the COVID-19 pandemic (15). Given the high rates of acute insomnia associated with the pandemic and evidence that acute insomnia often translates into chronic insomnia, it is also seen that public health interventions are necessary regarding this issue (16).

Based on all these data, this study aims to determine the level of insomnia and social media addiction and the factors affecting insomnia during the COVID-19 period.

### Research questions

1. What is the level of insomnia and social media addiction in adults during the COVID sleep period?
2. What is the socio-demographic characteristics that affect the level of insomnia and social media addiction in adults during the COVID sleep period?

## Materials and Methods

### Participants

This study was carried out in a cross-sectional and descriptive design. The data were collected via the Google form on the online platform (such as Facebook, WhatsApp) to minimize face-to-face interactions with all participants and reduce the

risk of transmission. The data were collected within six days in February 2021. The universe of the study consisted of individuals over the age of 18 who volunteer to participate in the study, and use social media (Facebook, Instagram, and WhatsApp). With the sample calculation formula given below, the sample size was determined as 384 and 405 people were reached.

In the sample calculation, the formula used to determine the number of individuals to be sampled to examine the incidence was used. If the number of individuals in the universe is unknown, the formula  $n = [t^2 \times (Pq)/d^2]$  is used (17). The sample size was determined as 384 using the sample calculation method in cases where the population is unknown. A total of 405 people who filled out online scales were included in the study. For the calculations, 0.95% confidence level, 5% standard deviation, and 50% unknown prevalence value were used.

$$n = (t^2 \times (Pq))/d^2$$

p = Frequency (probability) of the event being examined (0.5)

q = Frequency of non-occurrence of the event examined (1-p) (0.5)

t = The theoretical value in the t table at a certain degree of freedom and detected margin of error level (is 1.96)

d<sup>2</sup> = The desired deviation according to the frequency of the incident (5% deviation in 0.05)

A questionnaire form prepared by the researcher, insomnia severity index (ISI), and social media addiction scale were used in the study.

### Procedure

The online questionnaire created through Google forms was delivered to the participants via e-mail, WhatsApp, and Facebook groups. Information about the study was provided in the first part of the questionnaire. Before participating in the online survey, participants were asked to provide informed consent for participation and the collection and analysis of their data by selecting the "Yes, I agree and give my informed consent here" box. This option is mandatory, and those who select the "I do not want to participate in the study" option could not complete the study.

### Measures

#### Questionnaire form

The questionnaire form prepared by the researcher in line with the literature (3,18) includes questions about the socio-demographic characteristics of the participants such as gender, age, educational status, marital status, number of children, chronic disease, presence of a neighbor/relative diagnosed with COVID-19.

#### ISI

It is a scale developed by Morin to assess the severity of insomnia, and Boysan et al. (19) conducted a reliability and validity study in Turkish. Scale items consisting of seven questions are scored between 0 and 4. The scores that can be obtained from the scale vary between 0-28, and a score of 15 and above is clinically defined as insomnia. The characteristics

that the items of the scale measure are: i) difficulties in sleep onset, ii) difficulties in sleep maintenance, iii) early morning wakening problems, iv) satisfaction from the sleep pattern, v) interference of sleep difficulties with daytime functioning, vi) noticeability of sleep-related impairments, and vii) the stress level caused by the sleep problem (19).

#### Social media addiction scale (SMAS)

"SMAS" was developed by Şahin and Yağcı (7) and consists of 20 items. The scale items were formed in a 5-point Likert type, and the options were scored as "Not fitting for me at all" 1, "Not fitting for me" 2, "Moderately fitting for me" 3, "fitting for me" 4, and "very fitting for me" 5. The Cronbach alpha internal consistency coefficient for the overall scale was found to be 0.94; 0.92 for virtual tolerance sub-dimension and 0.91 for virtual communication sub-dimension. Items 1-11 constitute the "virtual tolerance" sub-dimension, and items 12-20 constitute the "virtual communication" sub-dimension. Fifth and eleventh items are reverse scored. The highest score that can be obtained from the scale is 100 points, while the lowest score that can be obtained is 20. As the score level increases, it is interpreted as the individual sees himself/herself as a "social media addict".

#### Ethical approval

A consent form was signed by all participants before they fill the survey. The study was approved by the Ethics Committee of Balıkesir University (date: 05/03/2021, no: 73323246/050.99/16601).

#### Statistical Analysis

The data were evaluated using the SPSS (Statistical Package for Social Sciences) package program. Percentages and averages were used in the evaluation of the data, the t-test for intergroup comparisons, and multiple regression analysis to evaluate the relationship between variables.

## Results

#### Participants' ISI and social media addiction levels

In the study, the ISI total score of participants was  $9.59 \pm 5.90$ , and 19% of them were at risk for insomnia. Participants' SMAS mean score was found to be  $51.03 \pm 14.84$ , and 30.9% of them were in the high-very high group in terms of social media addiction (Table 1).

#### ISI and SMAS according to some characteristics of participants

Table 2 shows the differences in the ISI and SMA scores of the participants according to various socio-demographic characteristics. In this study, the ISI mean score of female participants ( $10.02 \pm 6.01$ ) was statistically significantly higher than male participants ( $8.74 \pm 5.60$ ); the ISI mean score of single participants ( $10.30 \pm 5.68$ ) was statistically significantly higher than married participants ( $8.62 \pm 6.08$ ). The SMAS of the single participants ( $53.99 \pm 14.53$ ) was statistically significantly higher than the scores of the married participants ( $47.02 \pm 14.36$ ), unemployed participants ( $52.86 \pm 14.13$ ) had statistically significantly higher scores than employees ( $49.14 \pm 15.35$ ), and

those without a child ( $53.54 \pm 15.10$ ) had statistically significantly higher scores than those with a child ( $46.90 \pm 13.47$ ) ( $p < 0.05$ ) (Table 2).

#### Predictive factors of participants' ISI scores

In the study, the predictive power of the socio-demographic characteristics and the SMA levels of the participants on ISI were examined. Regression analyzes regarding the prediction of the general total averages of the scales were performed and the results are presented in Table 3. SMA level of the participants was determined to be a significant predictor of ISI ( $R=0.27$ ,  $R^2=0.07$   $F=4.334$ ,  $p < 0.000$ ) (Table 3).

## Discussion

Sleep has a strong regulatory effect on immune functions (20). Therefore, it is very important to maintain sleep patterns during COVID-19. In this study, the mean ISI score was  $9.59 \pm 5.90$  and 19% of the participants were at risk for insomnia. Bajaj et al. (21) found the mean ISI score to be  $8.59 \pm 5.79$  in their study with individuals aged 19 and over in the Indian population. Bartoszek et al. (14), found the mean ISI score as  $15.78 \pm 6.95$  and 86% of the participants were at risk for insomnia. In a study conducted in Greece, 37.6% of the participants found at risk for insomnia according to the ISI scale cut-off score (22). In a study conducted in Italy, moderate/severe level insomnia was detected in 17.4% of the participants during the COVID-19 period (14-day quarantine period) (15). In a study conducted with individuals aged 13-18 during the COVID-19 pandemic, the mean ISI score was determined as  $9.94 \pm 5.59$  (10). Lahiri et al. (11), found a moderate level of clinical insomnia in 13.32% and severe clinical insomnia in 1.85% of adult individuals during the COVID-19 pandemic. Various levels of insomnia were found in different studies in the literature. These results may be related to the time period during which the studies were carried out. This study was carried out at the end of the first year of the COVID-19 pandemic. It is thought that individuals may have partially become accustomed to living with the pandemic

**Table 1. Participants' ISI and social media addiction levels (n=405)**

Scales	Mean $\pm$ SD	Min-max	Range
Insomnia severity index	$9.59 \pm 5.90$	0-27	0-28
Social media addiction	$51.03 \pm 14.84$	20-91	20-100
Prevalence of insomnia	<b>n</b> %		
Normal	159	39.3	
Mild	169	41.7	
Moderate	59	14.6	
Severe	18	4.4	
Prevalence of social media			
No addiction	59	14.6	
Low addiction	43	10.6	
Mild addiction	178	44	
High addiction	89	22	
Very high addiction	36	8.9	

SD: Standard deviation, ISI: Insomnia severity index

during this period and may have adapted to the process. Also, it is not forbidden to be outside between 05:00 and 21:00 hours on weekdays during the study period. It is considered that these data may change during the period when there is a lockdown. In the study, ISI scores of females were statistically significantly higher than males. Similarly, Gualano et al. (15), found higher insomnia levels in females. In another study, as a result of regression analysis, it was found that being a female was associated with a high insomnia score (23). Bajaj et al. (21) found a higher level of insomnia in females compared to males in their study. It has been stated that this result is potentially related to the higher stress response of females (21).

In the study, ISI scores of single participants were found to be statistically significantly higher than married participants; ISI scores of unemployed participants were found to be statistically

significantly higher compared to employees. There are studies in the literature that give parallel results to this finding (24). McCracken et al. (25), found in their study that singles had higher ISI scores than married ones, and those who unemployed had higher ISI scores than employees. Similarly, in a study conducted with disabled individuals during the pandemic period, insomnia was found to be higher in singles than in married, and in non-working people compared to working (3). In another study, it was found that the rate of insomnia was higher in individuals who were single or not living with their spouses (26). These findings support the knowledge that being married has positive effects on both mental and physical health. Engaging in work activities can serve to move away from information about the pandemic. Interpersonal interactions in traditional working styles can heal depression and reduce the risk of mental disorders (27). In addition, because working

**Table 2. ISI and social media addiction scores according to some characteristics of participants (n=405)**

Characteristics	ISI			Social media addiction		
	M (SD)	Statistical analyses (t-test)	p	M (SD)	Statistical analyses (t-test)	p
<b>Sex</b>						
Female	10.02 (6.01)			51.51 (14.70)		
Male	8.74 (5.60)	2.080	<b>0.038*</b>	50.10 (15.13)	0.899	0.369
<b>Marital status</b>						
Married	8.62 (6.08)			47.02 (14.36)		
Single	10.30 (5.68)	2.855	<b>0.005*</b>	53.99 (14.53)	-4.792	<b>0.000*</b>
<b>Working status</b>						
Yes	8.89 (6.09)			49.14 (15.35)		
No	10.27 (5.64)	2.359	<b>0.019*</b>	52.86 (14.13)	-2.543	<b>0.011*</b>
<b>Having a child</b>						
Yes	8.76 (6.18)			46.90 (13.47)		
No	10.09 (5.68)	-2.215	<b>0.027*</b>	53.54 (15.10)	-4.468	<b>0.000*</b>
<b>Having a relative with COVID</b>						
Yes	10.17 (5.79)			50.50 (14.81)		
No	8.52 (5.98)	2.691	<b>0.007*</b>	52.02 (14.92)	-0.987	0.324

\*p≤0.05, COVID: Coronavirus, ISI: Insomnia severity index

**Table 3. Predictive factors of participants' ISI scores**

Model	Unstandardized coefficients		Standardized coefficients $\beta$	t	p
	B (95% CI)	SE			
Variables					
Constant	9.249	4.885	-	1.893	0.059
Sex	-1.018	0.640	-0.082	-1.592	0.112
Age	0.030	0.048	0.049	0.616	0.538
Marital status	1.251	1.052	0.105	1.190	0.235
Education level	-0.624	0.725	-0.046	-0.860	0.390
Working status	0.371	0.821	0.031	0.452	0.652
Having a child	0.416	1.106	0.034	0.376	0.707
Having a disability	-1.229	0.888	-0.071	-1.384	0.167
Having a relative with COVID	-1.513	0.614	-0.122	-2.464	<b>0.014*</b>
Social media addiction scale	0.067	0.020	0.167	3.294	<b>0.001*</b>

R=0.27, Adj.R<sup>2</sup>=0.07, F=4.334, p=<0.001, \*p≤0.001, Adj.R<sup>2</sup>: Adjusted R square; B: Partial regression coefficient;  $\beta$ : Standard partial regression coefficient, CI: Confidence interval, COVID: Coronavirus, ISI: Insomnia severity index

increases economic income, the risk of insomnia can be reduced by decreasing economic anxiety.

In this study, the ISI score was statistically significantly higher in those who did not have children than those who had children. In another study, a negative correlation was found between the number of children under the age of 18 and insomnia (1). It is considered that the child may provide psychosocial support to the parents during the pandemic period, and the responsibilities taken for the child may have kept the individual fit, so those with children may have experienced less insomnia. In the study, the ISI score was statistically significantly higher in those whose relatives had COVID-19. Relatives of COVID-19 patients may feel anxious about becoming infected, quarantined, and stigmatized, all of which can exacerbate psychological disorders (27). In this study, it is thought that those whose relatives had COVID-19 may have experienced these feelings. Contrary to our findings, Wang et al. (23), found that a relative/friend who had COVID-19 had no effect on insomnia.

A large amount of social interaction has been transferred online to the world in recent months to slow down the spread of COVID-19, and as a result, the use of SM has increased (28). In this study, the SMAS mean score of the participants was  $51.03 \pm 14.84$ , and 30.9% of them were in the severe/very severe group in terms of social media addiction. In the studies of Gülcü et al. (6), it was determined that the majority of the participants (99.1%) actively used social media during the COVID-19 period. In their studies, Islam et al. (29) found that problematic internet use is associated with social media use. It has been stated that individuals may have used social media to cope with their negative emotions during the quarantine period, and social media is the only place where people can socialize during this period. However, it has also been stated that excessive use of social media can lead to negative psycho-social consequences (30). Social media addiction can reduce other social activities and may have many negative consequences. At this point, it is thought that attention should be paid, and individuals should be educated about other activities that can be done at home during the pandemic period.

When the factors affecting social media addiction were examined, it was determined that those who were single, unemployed, and had no children were at risk. In the study of Duman (31), social media addiction was found at a higher level in singles and non-working people. In another study, problematic internet use was found to be higher in singles (32). On the other hand, in another study, it was determined that there was no relationship between problematic internet use and being single (33). It is thought that the less common cause of social media addiction in individuals with children may be due to the responsibilities that individuals take towards their children and spending more time with their children.

Among the factors that predict individuals' ISI scores in the study were the presence of a close individual who had COVID and social media addiction. Another study found an association between increased time spent on the Internet and insomnia (15). Lin et al. (5) found that problematic internet

use was associated with insomnia. In a study conducted with university students during the COVID-19 period, the incidence of insomnia was found to be higher in those who spent more than 3 hours on social media (34). These results are parallel to our findings. Reducing the time spent on social media can have an impact on insomnia.

### Study Limitations

This study had some limitations. Since the research was conducted with the online survey method, insomnia, and social media addiction of those who could not reach the survey could not be evaluated. Since the results of the study are limited to the sample, they cannot be generalized and evaluated to the whole society. The data obtained in the research is limited to the statements in the scales used in the research and the participants' own statements.

### Conclusion

Despite these limitations, the findings obtained from this study, the level of insomnia and SMA, contribute to our understanding of the factors that influence insomnia and SMA. In particular, the relationship between SMA and insomnia suggests that interventions should be made on SMA. More importantly, this study provides data that health professionals, educators, and administrators should develop effective strategies to prevent social media addiction and prevent insomnia.

### Ethics

**Ethics Committee Approval:** The study was approved by the Ethics Committee of Balıkesir University (date: 05/03/2021, no: 73323246/050.99/16601).

**Informed Consent:** A consent form was signed by all participants before they fill the survey.

**Peer-review:** Externally peer-reviewed.

### Authorship Contributions

Concept: S.D., S.K., Design: S.D., S.K., Data Collection or Processing: S.D., S.K., Analysis or Interpretation: S.D., Writing: S.D., S.K.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

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