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Anxiety, Social Media Addiction, and the Effect of These Conditions on Insomnia During the Coronavirus Disease 2019 Period

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Main Points

- It was observed that 5.1% of the participants had coronavirus disease 2019 (COVID-19) anxiety, 11.4% experienced moderate insomnia, and 3.3% experienced severe insomnia. Family income, anxiety level, and social media addiction were present with insomnia ($p < .05$).
- The social media addiction level of singles, high school graduates, those with fewer than three children, those who drink alcohol, and those who use smartphones more frequently were significant. ($p < .05$).
- The COVID-19 anxiety level of women was significantly higher than men ($p = .001$).
- It is important for individuals with social media addiction not to have technological devices in their sleep environment and, if necessary, to get support from health professionals to reach optimal sleep times.

Abstract

This study aimed to investigate the effects of anxiety, social media addiction, and these conditions on insomnia among adults aged 18 and above residing in Kahramanmaras during coronavirus disease 2019. This descriptive, cross-sectional study was conducted in Kahramanmaras province between September 15 and December 31, 2021. The study included individuals aged 18 and above who agreed to participate ($n = 394$). Participants' sociodemographic characteristics, responses to the coronavirus disease 2019 Anxiety Scale, Social Media Addiction Scale—Adult Form, and Insomnia Severity Index were recorded.

Of the participants, 61.4% were female, with a mean age of 33.59 ± 10.86 years, and 94.2% of the participants reported using at least one social media platform. The most commonly used social media platforms were WhatsApp (94.2%), Instagram (81.2%), and YouTube (66%). The mean anxiety level was 1.84 ± 3.17, the social media addiction level was 44.14 ± 14.24, and the insomnia severity index was 8.75 ± 5.67. It was observed that 5.1% of individuals had coronavirus disease 2019 anxiety, 11.4% had moderate insomnia, and 3.3% had severe insomnia. Significant differences were found in social media addiction levels among unmarried individuals, high school graduates, those with fewer than three children, alcohol consumers, those with longer smartphone usage, and those accessing the Internet at home ($p < .05$). Compared to males, females had significantly higher levels of coronavirus disease 2019 anxiety ($p = .001$).

The present study revealed an association between anxiety, social media addiction, and insomnia during the coronavirus disease 2019 pandemic. Future multicenter and prospective studies should investigate the relationship between social media addiction and anxiety and the impact of these conditions on insomnia to determine the temporal sequence and develop interventions targeting the initial manifestation based on the identified cause-and-effect relationship.

Keywords: Anxiety, COVID-19, family medicine, insomnia, social media addiction

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Introduction

On January 5, 2020, the World Health Organization identified a new coronavirus variant that has not been detected in humans before. This variant rapidly spreads from person to person via droplets and quickly turns into the global coronavirus disease 2019 (COVID-19) pandemic. The accompanying unknowns still threaten people physiologically, psychologically, and socially (Suryasa et al., 2021).

Like other coronavirus outbreaks, the rapid spread of the COVID-19 pandemic and the possibility of severe illness have caused significant anxiety in many of the population. It has been reported that individuals in professions with a higher risk of contracting the disease and their close contacts experience higher anxiety levels (Çiçek & Almalı, 2020; Gao et al., 2020). Satıcı et al. (2021) in their study in Türkiye, showed that fear of COVID-19 increased psychological symptoms such as stress, depression, and anxiety in individuals and decreased life satisfaction.

With the influence of restrictions and bans during the pandemic, people have started to pay more attention to social media to reduce their concerns about coronavirus and meet many psychological needs such as entertainment and social relations. In 2020, during the COVID-19 epidemic, social media users increased fastest in the last three years. During this period, the number of social media users in the world increased by 13% (490 million people) to 4.20 billion. In Türkiye, this number reached 60 million, with an increase of 11% (6 million people) (Bozkurt & Bozkurt, 2022).

The increased time spent on social media affects the duration and structure of sleep, which is a physiological necessity (Taş, 2022; Vahedi & Saiphoo, 2018).

Studies have suggested a significant relationship between social media addiction and sleep disorders, emphasizing that this relationship is bidirectional, with each factor amplifying or reducing the impact of the other (George et al., 2018; Priego-Parra et al., 2020). Furthermore, research indicates that individuals with high social media addiction become more anxious and depressed due to information overload (Çelik & Diker, 2021; Priego-Parra et al., 2020).

This study investigates the effects of COVID-19-related anxiety, social media addiction, and insomnia on individuals aged 18 and above residing in Kahramanmaras City.

Material and Methods

This descriptive and cross-sectional study was conducted in province between September 15 and December 31, 2021. The study population consisted of individuals aged 18 and above residing in Kahramanmaras province who agreed to participate. Written informed consent was obtained from the patients who agreed to take part in the study. Those who did not consent to participate and individuals under 18 were excluded from the study, and no sample calculation was performed. Those who agreed to participate and met the inclusion criteria within the specified period were included in the study. Ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Kahramanmaraş Sütçü İmam University (date: September 14, 2021, decision number: 05).

The data collection form of the study consisted of a total of 56 questions. The first section of the data collection form included participants' sociodemographic characteristics, while the second section included the Coronavirus Anxiety Scale (CAS), Social Media Addiction Scale—Adult Form (SMAS-AF), and Insomnia Severity Index (ISI). Participants were directed to the survey forms through face-to-face interviews and a link provided via Google Forms, and they were asked to complete the forms. While the survey was distributed via Google Forms to reach more people, it was specifically stated that a person should complete only one survey. The participants' place of residence in that province was determined according to their statements. Forms were sent to people known to reside in the districts, and they were asked to distribute them around. The weighted proportion method was used in this way.

In our study, the SMAS-AF, adapted to the population in Türkiye, was used to measure the level of social media addiction, CAS was used to measure coronavirus anxiety levels, and ISI was used to determine the level of insomnia. CAS, SMAS-AF, and ISI scores were considered dependent variables, while sociodemographic data were independent variables.

Lee developed CAS in 2020 to detect coronavirus anxiety (Lee, 2020). Turkish validity and reliability analysis was conducted by Bicer et al. (2020), and Cronbach's alpha value was reported as 0.832. The scale consists of five questions, each receiving points between 0 and 4. On this scale, where the lowest score can be 0 and the highest score is 20, a score of 9 or above is considered coronavirus anxiety.

Sahin and Yagcı (2017) developed SMAS-AF, consisting of 20 questions with a 5-point Likert type. It corresponds to the following statements: 1: "Not suitable for me at all," 2: "Not suitable for me," 3: "I am undecided," 4: "Suitable for me," 5: "Very suitable for me." While 18 questions on the scale were asked positively, two were asked negatively. The minimum score that can be obtained from the scale is 20, while the maximum score can be 100. Higher scores indicate a higher level of social media addiction. The internal consistency coefficient of the scale was found to be 0.940.

Insomnia Severity Index was developed by Bastien et al. (2001). It consists of seven questions. Each item consists of five options (scored from 0 to 4). The 0 – 7 point range is "clinically insignificant insomnia," the 8 – 14 point range is "subthreshold of insomnia," the 15 – 21 point range is "clinical insomnia (moderately severe)," the 22 – 28 point range is "clinical insomnia (severe)" means. The Turkish validity and reliability of the scale were conducted by Boysan et al. (2010), and the Cronbach alpha value was calculated as 0.790.

The data analysis for this study was conducted using SPSS 24.0 (IBM SPSS Corp.; Armonk, NY, USA) software package. Categorical variables were presented as numbers and percentages, while continuous numerical variables were presented as means, standard deviations, medians, and minimum and maximum values. The comparison of categorical variables was

performed using Pearson's chi-square test. The normal distribution of numerical data was evaluated using the Shapiro – Wilk test. Independent samples *t*-test was used to compare normally distributed continuous variables between two groups, while the Mann – Whitney *U*-test was used to compare non-normally distributed variables. The Kruskal – Wallis test was employed for comparisons among more than two groups. Bonferroni correction was applied to the *p*-values to determine the groups where significant differences originated. Multivariate linear regression analysis was used for parameters significantly associated with univariate analyses. A *p*-value less than .05 was considered statistically significant.

Results

A total of 394 individuals participated in this study. Of the participants, 61.4% were female, and the mean age was 33.59 ± 10.86 years (range: 18 – 65). Of the participants, 55.8% were married, 35.8% were employed, 22.8% were students, and 74.4% had a university degree or higher. Also, 31.7% of the participants had an income lower than their expenses, 51.3% had at least one child, and 59.1% lived with four or more people in their households.

One participant reported not owning a smartphone. Of the participants, 72.8% stated that they had been using a smartphone for at least seven years, and 11.4% reported using it for 7 hours or more daily (Table 1), and 84.3% of the participants accessed the Internet from home, and 94.2% indicated using at least one social media platform. The most frequently used social media platforms were WhatsApp (94.2%), Instagram (81.2%), and YouTube (66%).

Table 1.
Participants' Television and Smartphone Usage Characteristics

Variables	Count	Percentage
TV viewing time (per day)		
<1 hour	172	43.7
1 – 3 hours	73	18.5
4 – 6 hours	13	3.3
>7 hours	3	0.8
None	133	33.8
Presence of a smartphone		
Yes	393	99.7
No	1	0.3
Duration of smartphone usage		
<1 year	1	0.3
1 – 3 years	10	2.5
4 – 6 years	96	24.4
7 years and above	287	72.8
Daily smartphone usage duration		
<1 hour	28	7.1
1 – 3 hours	169	42.9
4 – 6 hours	152	38.6
7 hours	45	11.4

The average scores for the participants in the study were 1.84 ± 3.17 for CAS, 44.14 ± 14.24 for SMAS-AF, and 8.75 ± 5.67 for ISI. According to the results, 5.1% of the participants had COVID-19 anxiety, 11.4% experienced moderate-level insomnia, and 3.3% experienced severe-level insomnia.

When comparing participants' SMAS-AF scores with sociodemographic data, it was found that singles had a higher level of social media addiction than married individuals ($p < .001$). Additionally, when comparing participants with different education levels, it was observed that high school graduates had a significantly higher level of social media addiction than primary school graduates ($p = .033$). Furthermore, participants without children had a significantly higher level of social media addiction than those with three or more children ($p < .001$). The distribution of SMAS-AF scores based on participants' psychiatric history, smoking, and alcohol consumption characteristics is presented in Table 2.

When comparing SMAS-AF scores based on participants' television and smartphone usage characteristics, it was found that the duration of TV viewing and owning a smartphone did not

Table 2.
Distribution of Social Media Addiction Scale—Adult Form Scores According to Participants' Psychiatric History, Smoking, and Alcohol Use Characteristics

Variable	Mean ± SD	Median (Minimum – Maximum)	*p*
Psychiatric history			.062
No	43.62 ± 14.21	42.5 (20 – 94)	
Yes	47.17 ± 14.15	48 (24 – 76)	
Common anxiety disorder			.140
Yes	49.76 ± 11.56	51 (31 – 74)	
Depression	43.93 ± 17.93	46.5 (24 – 76)	
Panic attack	43.5 ± 14.39	42.5 (28 – 68)	
Obsessive-compulsive disorder	51.8 ± 10.55	54 (34 – 61)	
Anxiety disorder	59.5 ± 19.43	66.5 (31 – 74)	
Bipolar disorder	42 ± 0.0	42 (42 – 42)	
Borderline personality disorder	49 ± 0.0	49 (49 – 49)	
Psychiatric medication (in the past year)			.053
Yes	48.65 ± 14.56	48 (24 – 76)	
No	43.68 ± 14.14	43 (20 – 94)	
Smoking			.782
Quit	44.9 ± 14.03	46 (23 – 68)	
Current smoker	45.14 ± 15.18	43.5 (22 – 94)	
Non-smoker	43.71 ± 13.91	43 (20 – 91)	
Alcohol			.001
Drinker	49.06 ± 13.22	47 (22 – 94)	
Non-drinker	43.17 ± 14.25	42 (20 – 94)	

Table 3.
Distribution of Social Media Addiction Scale—Adult Form Scores Based on Participants' Coronavirus Disease 2019 Anxiety and Insomnia Severity

Variables	Mean ± SD	Median (Minimum – Maximum)	*p*
COVID-19 anxiety			<.001
Absent	43.36 ± 13.52	43 (20 – 94)	
Present	58.85 ± 19.02	54 (37 – 94)	
Insomnia severity			<.001
Clinically insignificant	40.44 ± 12.39	39 (20 – 91)[a]	
Subthreshold insomnia	45.98 ± 13.95	46 (20 – 78)[b]	
Moderate insomnia	48.78 ± 14.27	50 (22 – 94)[b]	
Severe insomnia	60.23 ± 22.25	53 (24 – 94)[b]	

Note: There is a statistically significant difference between the parameters indicated by different letters.
COVID-19 = Coronavirus disease 2019.

significantly affect the scores. However, as the daily smartphone usage duration increased, social media addiction significantly increased ($p < .001$).

When comparing participants who access the Internet at home versus those who access it at work, it was found that they had a significantly higher level of social media addiction ($p = .001$). Furthermore, when comparing social media users versus non-users, it was observed that they had a significantly higher level of social media addiction ($p < .001$). Among users of WhatsApp, YouTube, Instagram, Twitter, Snapchat, and other social media platforms, social media addiction was significantly higher than those who did not use these platforms ($p < .05$). The distribution of SMAS-AF scores and statistical data based on participants' COVID-19 anxiety and severity of insomnia are provided in Table 3.

When examining the factors influencing COVID-19 anxiety among participants, it was found that females had statistically significantly higher levels of COVID-19 anxiety compared to males ($p = .001$). According to this study, the family's total monthly income, the number of children, and the number of individuals living in the household did not significantly affect COVID-19 anxiety ($p > .05$). Participants' psychiatric history, smoking, and alcohol use characteristics did not show statistically significant differences in COVID-19 anxiety levels ($p > .05$). Individuals' use of social media platforms did not affect COVID-19 anxiety levels. At the same time, participants with severe insomnia had statistically significantly higher levels of COVID-19 anxiety compared to those with clinically insignificant insomnia ($p = .002$).

When examining the factors influencing insomnia severity among participants, no significant changes were observed in ISI scores based on sociodemographic characteristics ($p > .05$). Only participants with lower income than expenses had significantly higher ISI scores than those with higher income ($p = .001$). There was no statistically significant difference in ISI scores based on

Table 4.
Distribution of Insomnia Severity Index Scores Based on Participants' Television, Smartphone, and Social Media Use Characteristics

Usage Characteristics	Mean ± SD	Median (Minimum – Maximum)	*p*
Television viewing time (per day)			.537
<1 hour	8.61 ± 5.35	8 (0 – 28)	
1 – 3 hours	8.74 ± 5.54	9 (0 – 24)	
4 – 6 hours	11.15 ± 5.65	10 (2 – 22)	
>7 hours	13.67 ± 12.42	7 (6 – 28)	
None	8.58 ± 5.95	8 (0 – 24)	
Smartphone usage time			.938
<1 year	9.0 ± 0.0	9 (9 – 9)	
1 – 3 years	8.1 ± 5.53	7.5 (0 – 20)	
4 – 6 years	8.99 ± 5.65	8.5 (0 – 28)	
7 years and above	8.69 ± 5.71	8 (0 – 28)	
Daily smartphone usage time			.001
<1 hour	7.57 ± 4.92	7.5 (0 – 20)[a]	
1 – 3 hours	7.67 ± 5.26	7.0 (0 – 24)[a]	
4 – 6 hours	9.37 ± 5.8	9.0 (0 – 28)[ab]	
>7 hours	11.42 ± 6.12	11.0 (1 – 28)[b]	
Social media usage			.035
Non-users	6.3 ± 4.73	6.0 (0 – 17)	
Users	8.9 ± 5.69	8.0 (0 – 28)	

Note: There is a statistically significant difference between the parameters indicated by different letters.

psychiatric history, psychiatric medication use, and smoking status. Still, participants who consumed alcohol had significantly higher ISI scores than non-drinkers ($p = .035$). The distribution of ISI scores based on participants' television, smartphone, and social media use characteristics is provided in Table 4. When comparing individuals with and without COVID-19 anxiety, those with anxiety had significantly higher insomnia severity levels ($p = .001$).

In the multivariate linear regression analysis, incorporating the parameters significantly associated with insomnia severity in the univariate analyses, it was observed that total family income ($p < .001$), COVID-19 anxiety level ($p = .001$), and social media addiction level ($p < 0.001$) were independently associated with insomnia severity, irrespective of other variables (Table 5). However, the variables that were found to be significant in the univariate analyses, such as alcohol use ($p = .342$), social media usage ($p = .305$), and daily smartphone usage time ($p = .067$), were not found to be associated with insomnia severity in the multivariate analysis.

Discussion

The effects of the COVID-19 pandemic on mental health and well-being are expected to be profound and enduring. However, it

Table 5.
Independent Risk Factors for Insomnia Severity Index (Multivariate Linear Regression. Backward Step 3)

						95% CI	
	Unstandardized β	**SE**	**Standardized β**	***t***	***p***	**Under**	**Upper**
Still	4.726	1.297		3.644	<.001	2.176	7.276
Family income	−1.358	0.372	−0.169	– 3.653	<.001	– 2.089	– 0.627
CAS total score	0.285	0.086	0.159	3.296	.001	0.115	0.454
SMAS-AF total score	0.099	0.021	0.248	4.749	<.001	0.058	0.140

Dependent variable: ISI score. $R^2 = 0.416$; $F = 20.411$; $p < .001$

Note: CAS = Coronavirus Anxiety Scale; CI = Confidence interval; SE = Standard error; SMAS-AF = Social Media Addiction Scale—Adult Form.

remains uncertain who will be more affected and to what extent these effects will permeate all aspects of mental health. During this period, an increase in anxiety, depression, and sleep disorders has been reported in almost all segments of society, especially among those directly exposed to the virus (O'Connor et al., 2021). Another phenomenon observed concurrently with the increased quarantine measures is the rise in social media usage (Bozkurt & Bozkurt, 2022). This study examines the relationship between anxiety, social media addiction, and insomnia in Kahramanmaras province during the COVID-19 pandemic, demonstrating that these conditions are interrelated.

Epidemic diseases, especially pandemics such as COVID-19, for which there is no definitive information about their treatment, increase the fear, anxiety, and anxiety levels of societies due to the uncertainty they carry (Doğan & Düzel, 2020).

A study conducted with adult participants in China revealed that frequent use of social media during the COVID-19 pandemic and increased exposure to misinformation negatively affected individuals' mental well-being and increased anxiety and depression levels (Gao et al., 2020). It has been reported that one of the situations that cause the most anxiety for individuals is the possibility of transmitting the disease to other family members or loved ones during a pandemic (Çiçek & Almalı, 2020). Furthermore, the belief that personal protective equipment may not be easily accessible when needed and the negative news shared on the Internet also contribute to increased anxiety levels (Çiçek & Almalı, 2020).

In general, it has been observed that anxiety and depression levels are higher among women during the COVID-19 pandemic (Doğan & Düzel, 2020; Yılmaz et al., 2020; Yıldırım, 2020). Consistent with these findings, our study also found a statistically significant higher level of anxiety among women. A meta-analysis investigating the prevalence of anxiety symptoms in the general population during COVID-19 determined that 31.9% had anxiety symptoms. Our study showed that sleep problems were also observed with increased anxiety levels (Salari et al., 2020). In a recent systematic review and meta-analysis, the frequency of anxiety among COVID-19 cases was reported to be 47%, which was significantly higher compared to the population not affected by COVID-19, and the experience of COVID-19 was found to be associated with anxiety (Deng et al., 2021). Further studies are needed to investigate anxiety levels during different phases of the pandemic and among various segments of the population to better understand the relationship between the pandemic and anxiety levels.

Most studies on sleep disorders in the literature have focused on healthcare workers. These studies have reported a higher prevalence of COVID-19-related sleep disorders compared to the pre-pandemic period (Alimoradi et al., 2021; Jahrami et al., 2021). In all groups included in the studies, sleep problems are positively associated with psychological issues such as depression and anxiety (Alimoradi et al., 2021; Jahrami et al., 2021). Previous studies have reported a wide range of sleeplessness frequencies in the general population. While there are studies that report similar rates to our findings, it is observed that the frequency of sleeplessness varies across different segments of the population. The variability in reported frequencies of sleeplessness among studies may be due to the timing of the studies during different phases of the pandemic, the inclusion of different populations, the use of different scales, or reliance on self-reported sleep disorders.

In this study, another parameter evaluated was individuals' level of social media addiction. According to the findings, unmarried individuals had a significantly higher level of social media addiction than married individuals. Similarly, a study by Yuksel et al. (2020) reported that individuals without a partner had higher levels of social media addiction than those in a relationship. Additionally, in our study, participants with three or more children had a statistically significantly lower level of social media addiction than those without children. Unmarried individuals and those without children may have more time to use social media. Individuals with more children may have less time to browse social media due to their daily responsibilities and different engagements.

In this study, compared to primary school graduates, high school graduates had a significantly higher level of social media addiction. Zhao (2021), evaluated the relationship between social media addiction and educational status and reported a higher prevalence of incomplete education among social media addicts (68% vs. 62%). They also found that social media addiction decreased after graduation. On the other hand, Simsek et al. (2019), compared social media addiction levels among different educational levels and found no significant difference between the groups. They reported that high school and university students had moderate social media addiction.

In contrast to these studies, our study found that a certain increase in educational level (being a high school graduate) was associated with increased social media addiction. However, a higher level of educational attainment was not associated with an increase in social media addiction. A slight increase in educational level

may enhance individuals' social media usage skills, leading high school graduates to prefer social media more. Additionally, considering that being a university graduate contributes to personal development and awareness, it is thought that it may instill the skill of limiting social media usage.

In this study, when compared to non-drinkers, alcohol drinkers had a significantly higher level of social media addiction. Increased social media usage time increases the likelihood and frequency of encountering alcohol-related social media content. Curtis et al. (2018), examined the relationship between increased social media usage, alcohol-related content exposure, and alcohol consumption. They reviewed the results of 19 studies related to this topic. They concluded that exposure to alcohol-related content increases as social media usage time increases, significantly increasing alcohol consumption. They suggested that both phenomena are rooted in attachment and that having a predisposition to addiction-prone personality traits may be associated with both social media and alcohol addiction. Previous studies and the results of our study indicate that an increase in alcohol consumption is positively associated with increased social media usage. The observed relationship in our study may be attributed to individuals' susceptibility to addiction or their higher exposure to alcohol-related content on social media, as suggested in the literature.

This study found that as daily smartphone usage increased, social media addiction increased significantly. Individuals use their smartphones for various purposes, and spending time on social media is one of the primary purposes. Smartphones are the most commonly used devices for accessing social media. In a recent study, Chen et al. (2020), stated that individuals mainly connect to social media through their smartphones and that a significant relationship exists between the increase in smartphone usage time and social media addiction. Similarly, in our study, it can be said that the increase in smartphone usage time is expected to be associated with an increase in the time spent on social media and the frequency of addiction.

In this study, one of the parameters identified as independently affecting insomnia, among other variables, is family income level. It has been found that an increase in income is associated with a decreased risk of insomnia. This relationship has also been demonstrated in various previous studies. In the study by Etindele-Sosso (2020), it was noted that there is a relationship between educational level, occupation, and income level, with individuals with lower educational levels working in jobs with lower wages that are more physically demanding and have longer hours, leading to experiences of insomnia. Efforts to reduce individuals' income concerns and indirectly mitigate the impact on sleep health, an important component of overall health, should include long-term interventions to increase individuals' educational levels and employment opportunities.

Compared to individuals without COVID-19 anxiety, those with COVID-19 anxiety had a statistically significant higher level of social media addiction. This finding is consistent with the results of many previous studies. In a systematic review conducted by Keles et al. (2020). that examined the relationship between social media usage and anxiety levels, they evaluated the results of 13 studies published on this topic. They reported a significant increase in depression and anxiety levels associated with increased social media usage duration, regardless of the purpose of social media usage. Similarly, Shensa et al. (2018) determined, based on their study conducted on a nationally representative sample in the United States, that there is a relationship between social media usage level and the occurrence of anxiety and depression symptoms. Consistent with previous studies, our study also found a significant relationship between anxiety levels and social media addiction, independent of other variables. Especially during the pandemic, many people follow current information through social media platforms and become aware of various true and false situations. Individuals spend more time on social media and encounter negative news more frequently. Increased exposure to negative news on social media can be interpreted as an expected finding leading to increased anxiety among individuals who encounter such news. Our study did not provide a definitive interpretation as to whether anxiety leads to social media addiction or social media addiction leads to anxiety. Prospective studies conducted in the future can establish a cause-and-effect relationship by demonstrating which condition occurs earlier.

Compared to individuals with clinically insignificant levels of insomnia, participants with severe insomnia had a statistically significant higher level of COVID-19 anxiety. Increased anxiety levels were also identified as an independent risk factor for insomnia. Previous studies have shown a bidirectional relationship between anxiety and insomnia. In a systematic review and meta-analysis conducted by Arenas et al. (2019), it was stated that depression, anxiety, and sleep problems interact with each other, with the presence of one condition triggering another. Frontini et al. (2021) examined anxiety, sleep disorders, and physical activity levels during the pandemic. They demonstrated that these three conditions were interrelated, and individuals were negatively affected by the increase in these conditions during the pandemic. Consistent with these studies, our study found that anxiety levels were associated with insomnia, independent of other variables. Prospective studies can determine whether anxiety or insomnia occurs earlier and help develop possible interventions.

When compared to individuals with clinically insignificant levels of insomnia, those experiencing any level of insomnia were found to have a statistically significant higher level of social media addiction. Similar to anxiety, it was also found that social media addiction is associated with insomnia independent of other variables. During the COVID-19 pandemic, there has been an increase in both the frequency and duration of internet usage. Following school closures and the implementation of lockdown measures, many people turned to social media platforms to distract themselves from their troubles. While this can sometimes be beneficial for individuals, it can also lead to higher levels of social media addiction (Bozkurt & Bozkurt, 2022). Particularly during the pandemic, increased stress and anxiety have driven people to rely more heavily on the Internet for news consumption. However, false information on the Internet and social media has caused individuals to become even more tense and anxious instead of finding relief (Priego-Parra et al., 2020). Based on previous research and the findings of our study, it can be concluded that social media addiction increases the risk of experiencing insomnia.

The COVID-19 pandemic has shown a significant relationship between anxiety, social media addiction, and insomnia. The increased exposure to accurate or false news and comments on social media platforms can contribute to higher anxiety levels, disrupting sleep initiation and maintenance. Moreover, individuals with elevated anxiety levels may use excessive social media as a coping mechanism. Implementing measures to verify the information shared on social media platforms is important, as this can help reduce anxiety levels. Additionally, individuals with social media addiction may allocate more time to social media usage, which can encroach upon their sleep duration, decreasing optimal sleep time. Specifically for individuals with social media addiction, avoiding having access to social media or any electronic devices with screens in their sleep environment is recommended. Seeking support from healthcare professionals can also be beneficial in achieving optimal sleep durations, which are crucial for overall health. Future multicenter and prospective studies can further investigate the relationship between social media addiction, anxiety, and their impact on insomnia. By identifying the temporal sequence of these clinical entities and establishing a cause-and-effect relationship, interventions can be developed targeting the primary factor that emerges.

Limitations and Directions/Suggestions for Future Research

This study has some limitations. One limitation is that the participants included in the study were not selected through a specific sampling method, which restricts the representativeness and generalizability of the study to a certain population. While the survey was distributed via Google Forms to reach more people, it was specifically stated that a person should complete only one survey. Still, the possibility of repeated participation could not be completely prevented.

Although our study was conducted during the COVID-19 pandemic, it is essential to consider that the unknown characteristics of the disease and the implementation of social restrictions/lockdowns during the earlier stages of the pandemic may have influenced social media usage, anxiety levels, and insomnia in different ways. Therefore, the results of our study should be interpreted in light of the period in which the study was conducted. Another limitation is that our study did not involve prospective follow-up, which prevents establishing a cause-and-effect relationship or temporal precedence among the observed outcomes. Prospective studies with long-term follow-ups could be valuable in this regard.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

Ethics Committee Approval: This study was approved by Ethics committee of Kahramanmaraş Sütçü İmam University (approval number: 05, date: September 2021).

Informed Consent: Written informed consent was obtained from the patients who agreed to take part in the study.

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