Original Article

Association Between Social Media Addiction and Mental Health among Greek Young Adults

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Abstract
Background: The use of social media is constantly increasing, but it also has several negative consequences, especially for young people.
Aim: To examine the relationship between social media addiction and mental health among Greek young adults.
Methods: We conducted an online cross-sectional study during July 2024 in Greece. We used the Bergen Social Media Addiction Scale (BSMAS) to measure levels of social media addiction in our participants. We used the Patient Health Questionnaire-4 (PHQ-4) to evaluate levels of anxiety and depression in our participants. We measured gender, age, the number of hours that participants usually sleep when next day they have to go for their work/class, and how sleepy they felt at work/class.
Results: The majority of our participants were females (83.1%, n=300), while 16.9% were males (n=61). Mean age was 23.3 years. Our correlation analysis showed that social media addiction was correlated with increased anxiety and depression (p-value < 0.01 in both cases). Moreover, reduced age and reduced duration of night sleep was associated with increased social media addiction (p-value < 0.01 in both cases). Additionally, social media addiction was correlated with increased sleepiness in work/class (p-value < 0.01).
Conclusions: We found a positive correlation between social media addiction, anxiety and depression among young adults in Greece. Moreover, we found that reduced age and reduced duration of night sleep was associated with increased social media addiction. Additionally, social media addiction was correlated with increased sleepiness in work/class. Therefore, social media addiction is an important issue among young adults and policy makers should develop appropriate interventions to reduce this phenomenon.

Keywords: social media; addiction; anxiety; depression; young adults

Introduction

Social media usage is an ever-growing phenomenon, with active users exceeding 5 billion people worldwide at this moment (Statista, 2024). However, increased usage can lead to addiction as well, and it seems that social media addiction (in platforms like Facebook, Instagram, TikTok and YouTube) has emerged as a problem of global concern. In fact, according to a meta-analysis covering 64 countries, social media addiction accounted for more than 17% of the total studied population, as a subtype of digital addiction (Meng et al, 2022). Thus, various scales have been developed to measure this phenomenon (Varona et al, 2022); BSMAS (Bergen Social Media Addiction Scale), SMAS (Social Media Addiction Scale), BFAS (Bergen Facebook Addiction Scale), TTAS (TikTok Addiction Scale) (Galanis et al, 2024a, Galanis et al, 2024b) being some of them. These instruments are based on factors and behaviours such as salience, mood modification, tolerance, withdrawal etc. (Varona, 2022). Remarkably, scholars in the last years pay special attention into TikTok use and its impact on users' health (Galanis et al, 2024c, Katsiroumpa et al, 2024).

Meanwhile, incidence and prevalence of both depression and anxiety seem to increase among adolescents and young adults over the last years (Xiang et al, 2024). Youth unemployment, little or no social mobility, decreasing affordabilty are significant factors (among others) that can contribute to the occurence of these psychological disorders (Lakasing et al, 2020). This phenomenon may intensified during the COVID-19 pandemic and the consecutive lockdowns (Brunette et al, 2023), but it emerged far before the 2019 outbreak (Barker et al, 2019), (Thapar et al, 2022). Meanwhile, in addition to the other causes mentioned above, social media addiction seems to be another risk factor for the occurrence of depressive and anxious symptoms.

In this sense, various studies have indicated that excessive social media usage can lead to mental health issues, like depression, anxiety and body image acceptance (Bozzola et al, 2022). Another negative emotion that seems to be associated with social media addiction is FoMO (Fear of Missing Out), which in fact affects negatively the levels of life satisfaction of social media users (Bakioglu et al, 2022). Decreased quality of life due to depressive symptoms derived from social media addiction is mentioned in other studies as well (Vu Anh Trong Dam et al, 2023), highlighting the significance of the identification of this phenomenon and its treatment.

In this context, we conducted a study to examine the relationship between social media addiction and anxiety and depression among Greek young adults.

Methods

Study design and participants: We conducted a cross-sectional study during July 2024 in Greece. We developed an online version of the study questionnaire through google forms. Then, we disseminated the online questionnaire through social media. Adults with at least one profile in social media platforms could participate in our study. We considered as young adults those with an age between 18 and 35 years of age.

Personal data from participants were not collected. Our study was approved by the Ethics Committee of the Faculty of Nursing, National and Kapodistrian University of Athens (approval number; 510, June 2024). Moreover, we followed the guidelines of the Declaration of Helsinki (World Medical Association, 2013).

Measurements: We used the Bergen Social Media Addiction Scale (BSMAS) (Andreassen et al., 2016) to measure levels of social media addiction in our participants. The BSMAS measures six cores of the social media addiction, i.e., salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse. The BSMAS includes six items, and answers are on a five-point Likert Scale very rarely (1), rarely (2), sometimes (3), often (4), and very often (5). Total BSMAS score ranges from 6 to 30. Higher scores indicate higher levels of social media addiction. We used the Greek version of the BSMAS (Dadiotis et al., 2021). In our study, Cronbach's alpha for the BSMAS was 0.83. We used the Patient Health Questionnaire-4 (PHQ-4) (Kroenke et al.,

2009) to evaluate levels of anxiety and depression in our participants. The PHQ-4 includes four items: two items measuring anxiety, and two other items measuring depression. Answers are on a four-point Likert scale from 0 (not at all) to 3 (nearly every day). Anxiety and depression scores range from 0 to 6. Higher scores indicate higher levels of anxiety and depression. We used the Greek version of the PHQ-4 (Karekla et al., 2012). In our study, Cronbach's alpha for the anxiety scale was 0.79, and for the depression scale was 0.73.

We measured gender, age, the number of hours that participants usually sleep when next day they have to go for their work/class, and how sleepy they felt at work/class. We measured sleepiness in at work/class on a five-point Likert scale; not at all (1), a little (2), moderate (3), a lot (4), very much (5).

Statistical analysis: We present categorical variables with numbers and percentages. Also, we present continuous variables with mean, standard deviation, median and range. We used Pearson's correlation coefficient to estimate the correlation between BSMAS and anxiety, depression, and age. Also, we used Spearman's correlation coefficient to estimate the correlation between BSMAS and the number of hours that participants usually sleep when next day they have to go for their work/class, and sleepiness. We used the independent samples t-test to identify differences between males and females regarding the BSMAS. P-values less than 0.05 were considered as statistically significant. We used the IBM SPSS 21.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) for the analysis.

Results

The majority of our participants were females (83.1%, n=300), while 16.9% were males (n=61). Mean age was 23.3 years, standard deviation was 4, median was 22, and range was 17.

Among our participants, 37.1% (n=134) reported that they feel moderately sleepy at work/class, 29.9% (n=108) reported that they feel a little sleepy, 26.3% (n=95) reported that they feel quite sleepy, 3.9% (n=14) reported that they do not feel sleepy at work/class, and 2.8% (n=10) reported that they feel very sleepy. Mean duration of night sleep was 6.4 hours, standard deviation was 1, median was 6, and range was 6.

Descriptive statistics for the BSMAS are shown in Table 1. Mean BSMAS score was 16.1 (standard deviation; 5.1). Mean tolerance score was 3.1, mean withdrawal symptoms score was 2.8, mean conflict score was 2.7, mean salience score was 2.6, mean mood modification score was 2.5, and mean relapse score was 2.4.

Table 1. Descriptive statistics for the Bergen Social Media Addiction Scale (BSMAS).

Scale	Mean	Standard deviation	Median	Range
BSMAS	16.1	5.1	16	23
Salience	2.6	1.2	3	4
Mood modification	2.5	1.1	3	4
Tolerance	3.1	1.1	3	4
Withdrawal symptoms	2.8	1.2	3	4
Conflict	2.7	1.2	3	4
Relapse	2.4	1.2	2	4

Descriptive statistics for the PHQ-4 are shown in Table 2. Mean anxiety score was 2.8 (standard deviation; 1.6), while mean depression score was 2.6 (standard deviation; 1.2).

Table 2. Descriptive statistics for the PHQ-4.

Scale	Mean	Standard deviation	Median	Range
Anxiety	2.8	1.6	3	6
Depression	2.6	1.2	3	4

Table 3 presents correlations between BSMAS and anxiety, depression, age, duration of night sleep, and sleepiness in work/class. Our correlation analysis showed that social media addiction was correlated with increased anxiety and depression (p-value < 0.01 in both cases). Moreover, reduced age and reduced duration of night sleep was associated with increased social media addiction (p-value < 0.01 in both cases). Additionally, social media addiction was correlated with increased sleepiness in work/class (p-value < 0.01).

Table 3. Correlations between Bergen Social Media Addiction Scale (BSMAS) and anxiety, depression, age, duration of night sleep, and sleepiness in work/class.

Variable	Anxiety	Depression	Age	Duration of night sleep	Sleepiness in work/class
BSMAS	0.32**	0.43**	-0.16**	-0.14**	0.21**
Salience	0.19**	0.29**	-0.14**	-0.07	0.10
Mood modification	0.28**	0.24**	-0.08**	-0.13*	0.11*
Tolerance	0.25**	0.37**	-0.09	-0.10	0.29**
Withdrawal symptoms	0.28**	0.41**	0.01	-0.06	0.13*
Conflict	0.13*	0.16*	-0.08	-0.03	0.02
Relapse	0.28**	0.42**	-0.24**	-0.19**	0.25**

* p-value < 0.05 * p-value < 0.01

Discussion

This study evaluated the relation between social media addiction (SMA) and anxiety and depression among Greek young adults. The results indicated that the problematic and excessive use of social media can lead to negative effects on mental and physical health, since symptoms of anxiety, depression and sleepiness were reported. In fact, the vast majority of our participants (approximately 96%) mentioned a degree of sleepiness at work / class due to SMA. Regarding mental health, a positive correlation was found between SMA and anxiety and depression, a result which aligns with previous literature (Senturk et al, 2021, Galanis et al. 2023). The correlation coefficients between SMA (measured by the Bergen Social Media Addiction Scale) and anxiety and between SMA and depression were 0.32 and 0.43 respectively, implying statistical significance ($p < 0,01$ in both cases). Another study suggests that similar addictions e.g. mobile phone addiction are positive indicators of anxiety and

depression, and negative indicators of sleep quality (Ying et al, 2020).

Moreover, it is worth noting that the components of the BSMAS were salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse. Among those descriptive statistics, mood modification, withdrawal and relapse were found to have the highest positive association with anxiety ($p < 0,01$ in all cases). Likewise, the ones with the highest positive association with depression were tolerance, withdrawal and relapse ($p < 0,01$ in all cases). This finding is consistent with a similar finding of a study which indicated that mood modification, relapse, withdrawal, and conflict were the four components of BSMAS which were positively associated with several measures of psychopathological symptoms of the participants (Fournier et al, 2023). Therefore, individuals who are engaged with intense and problematic social media use are particularly at risk of lower well - being (Boer et al, 2020), as mentioned in the Introduction. It should be noted that both mean anxiety and mean depression scoring were considered positive among the participants in our study, according to PHQ - 4 screening tool (Löwe et al, 2010).

SMA is a phenomenon which affects mainly adolescents and young adults, as shown in relative literature and worldwide statistics (Statista, 2019), (Abbasi et al, 2019), (Kocak et al, 2021). Among other sociodemographic factors, age plays a key role in the occurrence of SMA. Our study indicated that reduced age of the participants was associated with increased SMA ($p < 0,01$), thus our results agree with those of previous research in the field. Specifically, relapse (i.e. failed attempts to control social media usage) was the one variable that showed the strongest negative relationship with age, among the participants.

According to Lafontaine-Poissant et al., intense and problematic social media use is associated with worse sleep health (Lafontaine - Poissant et al, 2024). Literature suggests that the blue light of the devices, the emotional content / nature of social media and “fear of missing out” seem to be the causes of poor quality of sleep among adolescents and young adults. The findings of the present study highlight that increased SMA was associated with reduced duration of night sleep as well as with increased sleepiness at class or work ($p < 0,01$ in both cases). Especially tolerance (i.e. more social media use in order to attain the same degree of satisfaction over time) was the variable that displayed the strongest positive correlation with sleepiness at work/class, among the others. Reduced duration of sleep may be due to delayed bedtime, difficulty falling asleep or desynchronisation of circadian rhythm during sleeptime (Zhu et al, 2023). Meanwhile, another study that involved university students has shown that internet addiction is a risk factor for increased sleepiness at daytime and specifically it increased the risk of daytime sleepiness approximately one time (Demir et al, 2020). However, further research is required in the Greek case so as to examine this phenomenon.

Our findings agree with those of relative literature, meaning that a positive correlation between social media addiction and depressive and anxiety symptoms was found. Since this phenomenon has only occurred in recent years and there are no data for the Greek case so far, the importance of the present study is evident. However, future research to further study this correlation is essential; for instance, it is recommended to seek to what extent these negative emotions and reactions are influenced by educational, professional and economic

status, gender, age group of the subjects etc. The research of the relation between Fear of Missing out (FOMO) and SMA is also estimated to illuminate certain perspectives of social media addiction. Regarding sleep quality, further research exploring the relationships between sleep aspects (daytime naps, insomnia) and SMA should be conducted. BSMAS and PHQ-4 which were selected are certified tools that measure the levels of addiction and negative symptoms respectively, reinforcing the reliability of the results.

Our study had several limitations. We employed a convenience sample of young adults in Greece. Thus, our sample was not representative of young adults in Greece. Moreover, we performed a cross-sectional study, and, thus, we cannot extract causal relationships between social media addiction, anxiety and depression. Additionally, we used self-reported tools to measure social media addiction, anxiety and depression. Therefore, information bias is probable in our study.

In conclusion, we found a positive correlation between social media addiction, anxiety and depression among young adults in Greece. Moreover, we found that reduced age and reduced duration of night sleep was associated with increased social media addiction. Additionally, social media addiction was correlated with increased sleepiness in work/class. Therefore, social media addiction is an important issue among young adults and policy makers should develop appropriate interventions to reduce this phenomenon.

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