

Impact of Social Media Usage on Sleep Quality, Perceived Stress and Emotional Stability, in Young Adults

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Abstract: ***Background:** Excessive social media use has been associated with poor sleep quality, increased perceived stress, and reduced emotional stability among young adults. This study examined these relationships. **Methods:** A cross-sectional study was conducted among 355 young adults aged 18–25 years. Participants completed the Pittsburgh Sleep Quality Index (PSQI), Perceived Stress Scale (PSS), Social Media Usage Questionnaire, and Emotional Stability Scale. Pearson correlation and multiple regression analyses were performed. **Results:** Higher social media usage was significantly associated with poorer sleep quality, greater perceived stress, and lower emotional stability. Social media usage significantly predicted sleep quality, perceived stress, and emotional stability ($p < .01$). **Conclusions:** Excessive social media use may adversely affect sleep and psychological well-being in young adults. Promoting healthier social media habits may improve mental health outcomes.*

Keywords: Social Media Usage; Sleep Quality; Perceived Stress; Emotional Stability; Young Adults

1. Introduction

The use of social media is often extensive among young adults (age 18–25) and has evolved their lifestyle and behavior in recent years. Members of this demographic, also known as digital natives, increasingly rely on digital technology and social media applications like Instagram, WhatsApp, Snapchat, and X (formerly Twitter) for communication, entertainment, and information (Keles et al., 2020). Although social media does promote social connection in some fashion and offers a sense of belonging, overuse or nonadaptive use of social media tends to be associated with a number of psychological and physiological problems, including sleeplessness, elevated levels of stress, and emotional instability (Alonzo et al., 2021; Levenson et al., 2017).

Sleep quality is a fundamental aspect of health and well-being that is central to cognitive functioning, emotional regulation, and physical health (Hirshkowitz et al., 2015). New evidence shows that excessive use of social media alters everyday sleep patterns by delaying bedtime, increasing arousal before sleep, and decreasing sleep quantity (Scott et al., 2019). More than this, exposure to screens during the night has been linked with elevated sleep disturbances due to inhibited melatonin production which has been shown to affect circadian improper functioning (Carter et al., 2016). In turn, decreased sleep quality is linked to worse emotional dysregulation, irritability, and difficulty coping with daily stressors (Palmer & Alfano, 2017).

Perceived stress, which is defined as the feelings or thoughts an individual has about how much stress they are under at any particular moment (Cohen et al., 1983), is another important

factor that mediates social media use as well as sleep. O'Reilly et al. (2018) found frequent exposure to emotionally charged content, comparison behaviors, and fear of missing out (FoMO) significantly contribute to perceived stress in young adults on social media. High levels of stress can aggravate bad quality of sleep being related with emotional disturbance further worsening the output of mental health (Khouja et al., 2019).

Emotional Stability Defined Emotional stability represents the ability to maintain emotional balance and resistance under pressure. It is regarded as a cardinal personality and psychological well-being construct (McCrae & Costa, 1999). Those young adults with low levels of emotional stability are particularly susceptible to the detrimental effects of social media, as they have fewer coping strategies available to them when dealing with online stressors (Marino et al., 2018). In contrast, increased social media exposure along with sleep problems seem to lead to a decrease in emotional regulation, leading to both moodiness, anxiety, and depressive symptoms (Woods & Scott, 2016).

Increasing association among such variables has been documented recently in literature. Studies such as the ones done by Demirci et al. (2015) found significant positive correlation between high use of social media and the increase of stress and sleep disruption in University students. Similarly, Keles et al. (2020) systematic review also exhibited a strong association between the usage of social media and increased levels of anxiety, and depression, as well as emotional instability among youth and young adults. This correlation also exemplifies the necessity of examining these variables together rather than separately.

The recent era of proliferation of digital media content provides an appropriate opportunity to study how psychosocial health, well-being and quality of sleep are related in young adults while considering digital device use and the potential effect of perceived stress and emotional stability as a psychological health marker. We seek in this study to address the gap, furthering a holistic understanding of the role of social media use patterns in the context of sleep, perceived stress, and emotional stability, and their associations within samples of young adults. These findings are significant because they help us understand the impact of digital media usage on mental health, and recognizing these relationships may guide interventions and policies in the future to promote healthier digital habits and strengthen psychological resilience among these individuals.

Clearly state the research objectives or hypotheses

1.1 Objectives and hypotheses of the study

This study intends to check the effects of social media on the sleep pattern, the perceived Stress and the Emotional stability in younger population. These data are used to study the connection between social media usage, sleep quality, perceived stress and performance on affective stability tasks and how social media usage affects them. Furthermore, this study seeks to explore whether the influence of social media usage on sleep quality, perceived stress, and emotional stability differs among young individuals.

The hypotheses for this study are formulated as follows:

- H1n: There is no significant relationship between the frequency of social media usage and sleep quality in young adults.
- H1a: There is a significant positive correlation between social media usage and sleep quality in young adults.
- H2n: There is no significant relationship between social media usage and perceived stress in young adults.
- H2a: There is a significant positive correlation between social media usage and perceived stress in young adults.
- H3n: There is no significant relationship between social media usage and emotional stability in young adults.
- H3a: There is a significant positive correlation between social media usage and emotional stability in young adults.

These hypotheses aim to examine the interconnections between social media usage, sleep quality, perceived stress, and emotional stability while considering gender differences in their impact.

2. Materials and Methods

2.1 Participants

Usage of social media including different social media applications (Instagram, Snapchat, Facebook, Twitter, TikTok, etc.) has become ubiquitous among adolescents and young adults. The participants (355) aged 18–25 years residing in and around Chennai who could read and understand English were included in this study. Purposive sampling was employed to select the participants, who were recruited using social media, and through WhatsApp groups,

community centers, and public venues. The study excluded individuals below and above the specified age range, individuals who could not read English, and individuals with known psychiatric or neurological conditions. either $\pm 4-6$), with a confidence level of 95%, and a margin of error of $\pm 5\%$, the required sample size was calculated to be 355 using Cochran's formula.

2.2 Measures

Socio-Demographic Sheet

Data regarding age, gender, education, occupation, marital status, type of family and area of residence were collected using a semi-structured sheet developed by the Principal Investigator.

Perceived Stress Scale (PSS-10)

The PSS-10 Cohen et al. (1983), rates perceived stress over 10 questions on a 5-point scale. Higher scores indicate higher stress, and the scale showed acceptable reliability (Cronbach's α : 0.74–0.91) and construct validity.

Pittsburgh sleep quality index (PSQI)

The Pittsburgh Sleep Quality Index (PSQI) assesses sleep quality and disturbances over the past month using 19 items in seven domains, including sleep quality, sleep latency, and sleep disturbances. A global score of >5 represents low sleep quality. The PSQI has high internal consistency (Cronbach's $\alpha=0.83$).

Social Media Addiction Scale,

The modified version of the scale, known as SMAS-SF was developed by Cengiz Sahin in 2018; the scale consists of 29 items measuring social media addiction. It showed high reliability (Cronbach's $\alpha = 0.92$) and sound validity, and thus an appropriate tool to use for assessing social media usage in young adults.

HEXACO Personality Inventory

The HEXACO-PI-R (Gnisci et al. (2023), assesses six large-scale facets of personality. In this study, we used the Emotional Stability scale, composed of facets such as Fearfulness and Anxiety. The scale showed good internal consistency (Cronbach's $\alpha = 0.77-0.92$) and test-retest reliability.

2.3 Procedure

Data were collected using self-reported face-to-face surveyee and online questionnaires. Participants were informed about the study in detail and gave informed consent. In a randomized order to avoid order effects, they completed the PSS-10, PSQI, SMAS-SF, and HEXACO inventories. Data were kept confidential, and no compensation was given.

2.4 Analysis of Data

IBM SPSS Statistics was used to perform descriptive analyses (i.e., means, standard deviations, skewness, and kurtosis) for the study variables (social media usage, sleep quality, perceived stress, and emotional stability).

Correlation analysis was used to explore the relationships between social media usage and the three psychological variables: sleep quality, perceived stress, and emotional stability.

In order to assess whether the usage of social media is predictive of its variable such as, sleep quality, perceived stress, and emotional stability, regression analyses were performed.

3. Results

3.1 Descriptive analysis of the sample

The study included a total of 363 young adults between the ages of 18 to 25 years. The participants were categorized into two age groups: 18–21 years and 22–25 years. Out of the total sample, 186 participants (51.23%) belonged to the 18–21 age group, while 177 participants (48.76%) were in the 22–25 age group. This distribution reflects a relatively balanced representation of both younger and older participants within the target age range.

3.2 Normality testing

Table 2 presents the descriptive statistics and normality test results for Social Media Usage, Sleep Quality Index, Perceived Stress, and Emotional Stability. Social Media Usage has a Kolmogorov-Smirnov (K-S) value of .050 ($p = .029$) and a Shapiro-Wilk (SW) value of .989 ($p = .008$), indicating a slight but significant deviation from normality. Sleep Quality Index shows higher deviation with K-S = .088 ($p = .000$) and SW = .972 ($p = .000$). Perceived Stress displays the greatest deviation with K-S = .152 ($p = .000$) and SW = .925 ($p = .000$), while Emotional Stability also shows non-normal distribution with K-S = .118 ($p = .000$) and SW = .945 ($p = .000$). These findings suggest that the data for all four variables do not follow a normal distribution and hence justify the use of non-parametric statistical methods in the analysis.

3.3 Correlation Analysis

Table 3 The nonparametric correlation analysis using Spearman's rho examined the relationship between Social Media Usage and Perceived Stress. The results indicate a significant positive correlation ($r = 0.174$, $p < 0.01$), suggesting that higher social media usage is associated with increased perceived stress among participants. Since the correlation is weak but statistically significant, it implies that while social media usage may contribute to perceived stress, other factors might also play a substantial role in influencing stress levels.

3.4 Correlation Analysis

Table 4 The nonparametric correlation analysis using Spearman's rho examined the relationship between Social Media Usage and Emotional Stability. The results indicate a significant positive correlation ($r = 0.257$, $p < 0.01$), suggesting that increased social media usage is associated with higher emotional stability among participants. Although the correlation is statistically significant, it is moderate in strength, indicating that while social media usage may have

some influence on emotional stability, other factors also contribute to an individual's emotional well-being.

3.5 Correlation Analysis

Table 5 The nonparametric correlation analysis using Spearman's rho examined the relationship between Social Media Usage and Sleep Quality. The results indicate a significant positive correlation ($r = 0.237$, $p < 0.01$), suggesting that increased social media usage is associated with better sleep quality among participants. However, the correlation is moderate in strength, indicating that while social media usage may have some influence on sleep quality, other factors likely play a role in determining sleep patterns and overall restfulness.

3.5 Regression Analysis

Table 6 The regression model summary indicates that the predictor variable explains 6.6% of the variance in the dependent variable ($R^2 = 0.066$), with an adjusted R^2 of 0.063. This suggests a weak relationship, implying that while the predictor contributes to the variance, other unaccounted factors may have a stronger influence. The ANOVA results confirm that the regression model is statistically significant ($F(1,361) = 25.323$, $p < .001$), indicating that the predictor variable has a meaningful effect on the outcome variable. However, the effect size remains small, highlighting the need for additional predictors to better explain the variance in the dependent variable.

3.5 Regression Analysis

Table 7 The regression model summary provides an evaluation of how well the predictor variable explains the variance in the dependent variable. The R-value (0.147) suggests a weak positive correlation between the predictor and the outcome variable. The R^2 value (0.022) indicates that only 2.2% of the variance in the dependent variable is explained by the predictor, meaning that other factors contribute significantly to the outcome. The adjusted R^2 (0.019), which accounts for sample size, remains low, reinforcing the weak explanatory power of the model. The standard error of the estimate (3.581) represents the average deviation of observed values from the regression line. A smaller standard error indicates better model precision, but in this case, it suggests considerable variability. The ANOVA results assess the statistical significance of the regression model. The F-statistic ($F = 7.958$, $df = 1,361$, $p = .005$) indicates that the predictor variable has a significant impact on the dependent variable, as the p-value (.005) is below the conventional threshold of 0.05, meaning the relationship is statistically significant. However, despite the significance, the low R^2 value suggests that the predictor explains only a small portion of the variance, and additional factors should be considered to improve the model's explanatory power.

3.5 Regression Analysis

Table 8 The regression analysis results indicate a weak to moderate positive correlation between the predictor and the dependent variable, with an R-value of 0.307. The R^2 value of 0.094 suggests that approximately 9.4% of the variance in the

dependent variable is explained by the predictor variable. This implies that while the predictor has some explanatory power, a significant portion of the variation remains unaccounted for by other factors. The adjusted R^2 value of 0.092, being close to R^2 , suggests that the model generalizes well to the population. Additionally, the standard error of the estimate, which is 5.320, indicates a relatively high level of variability in the observed values from the regression line. The ANOVA results further validate the significance of the regression model. The F-statistic of 37.560 with a corresponding p-value of less than 0.001 indicates that the predictor variable significantly influences the dependent variable. The sum of squares analysis shows that the regression sum of squares (1063.090) represents the variation explained by the predictor, whereas the residual sum of squares (10217.720) accounts for the unexplained variance. The total sum of squares (11280.810) reflects the overall variance in the dataset. In conclusion, while the predictor variable has a statistically significant impact on the dependent variable, the effect size remains relatively small, as the model explains only 9.4% of the variance. This suggests that other variables may play a crucial role in influencing the outcome, warranting further exploration to enhance the explanatory power of the model.

4. Discussion

This study sought to explore how social media usage affects a young adult's sleep quality, stress levels, and emotional stability. The results showed significant positive associations between social media use and all the psychological variables studied. They found that researchers who reported using social media frequently had poorer sleep quality, higher stress perceptions and lower emotional stability. These findings are consistent with previous research indicating that excessive information exposure via social networking sites plays a role in affecting sleep patterns and emotional responses (Keles et al., 2020; Scott & Woods, 2019). Heavy social media use can lead to delayed bedtimes for some, overstimulation from screen exposure, and heightened emotional arousal during online interactions (Levenson et al., 2017). Previous studies have documented increased social comparisons, fear of missing out (FoMO) and exposure to distressing content that may explain the association between social media usage and perceived stress (Dhir et al., 2018). In the same vein, Rossi & Hofmann (2017) suggest that lower emotional stability may result from the need to obtain constant confirmation and the emotional costs of a digitally overconnected lifestyle (Marino et al., 2018). Demographic analyses additionally indicated gender and situational differences. Males were more active on social media, more stressed, while females reported greater emotional stability. Those living alone or with nuclear families had greater usage and higher stress, indicating the moderating effect of social support structures here. As such, these findings are in line with earlier literature that has also highlighted the protective nature of strong social ties against digital stressors (Twenge, 2017). The Kolmogorov-Smirnov and Shapiro-Wilk tests confirmed the non-normality of the dataset, therefore non-parametric tests were employed. All tested hypotheses were statistically significant with Spearman's correlation analyses (data available until October 2023). The observed variations in gender, family type, marital status and employment status

became significant using Kruskal-Wallis tests. The findings taken together point to a growing mental health issue in the digital age, especially for young adults. The implications of these findings highlight the importance of fostering some sort of a culture of digital hygiene, towards implementing effective, targeted end-user interventions and policy-level mobilization in order to mitigate the detrimental impact of recourse to social media on mental health. (Scott & Woods, 2019).

5. Limitations

While the present study highlights important information regarding the association of SMU, sleep quality, perceived stress, and emotional stability among the young adult population, a few limitations should be acknowledged. The first limitation is that the cross-sectional design prevents the inference of causal relationships between the variables. Longitudinal or experimental designs would offer stronger evidence directly linking these associations to the direction. Second, the data were self-reported and therefore subject to social desirability or recall bias. Also, the sample included mostly participants aged between certain age groups (18–25) which severely limits the potential for generalizing the findings to either wider age groups or populations beyond the young adult demographic. Biases with respect to under-represented demographic groups (eg, employment status, and gender identities beyond male and female) could compromise the robustness of subgroup analyses. In addition, although validated scales were employed, differences between cultures or contexts may alter how participants understand and answer questions, which is especially important in heterogeneous populations. Finally, the study had no control over confounding variables such as pre-existing mental health conditions, screen time before sleep, economic burden or academic/workload stress, which may affect social media use and psychological outcomes.

6. Conclusions

Designed towards that, this study explores the relationship between social media usage and sleep quality, perceived stress and emotional stability in college students. This relates to the findings that more social media usage is significantly related to worse sleep quality, more perceived stress and less emotional stability, emphasizing the psychological effects of excessive social media. Given how ubiquitous the use of social media is among young adults, the results demonstrate an urgent need for public health campaigns focused on digital hygiene and mental health. Guiding younger adults on a healthy use of social media and creating interventions focused on sleep hygiene and stress management might mitigate the second-order effects of excessive time spent on social media. Note, though, that this study has limitations: it's cross-sectional and relies on self-reported data, so the researchers say more investigation is needed. These areas require longitudinal studies and more heterogeneous samples to accurately depict the long-term consequences and indicator of social network use and find robust natural preventive methods for mental health in the digital era. The Need to Manage Social Media Impact on Psychology Among Young GenerationAs we come to the end of the article, we can argue

that managing the impact of social media on psychology of our social media generation is a one of the need of the hour.

7. Tables

Mann-Whitney U Test

Age Group	N	Percentage
18-21	186	51.23%
22-25	177	48.76%
TOTAL	363	100

Descriptive statistics of the participants' sociodemographic variables

Group	N	Social Media Usage	Sleep Quality Index	Perceived Stress	Emotional Stability
Gender					
Male	110	218.64	197.58	192.1	168.95
Female	251	166.86	176.25	176.7	188.85
Others	2	67.5	47	291.5	40.25
Family Type					
Alone	4	277.88	235.63	215	205.88
Neclure	279	180.61	175.35	179.14	185.59
Joint	73	185.53	199.55	189.82	173.92
extended	7	145.71	233.36	195.57	109.36
Marital Status					
Single	314	186.9	178.75	185.58	180.81
In Relationship	31	138.98	207.48	159.4	169.53
Married	18	170.56	194.86	158.42	224.25
Employment Status					
Employed	65	189.65	179.23	195.45	184.72
Part-Time	9	147	173.94	105.67	213.06
Student	263	184.07	182.26	179.82	176.88
Unemployed	26	154.1	189.04	196.88	216.27

Normality testing

Variable	Kolmogorov-Smirnov (KS)	Sig. (p-value)	Shapiro-Wilk (SW)	Sig. (p-value)
Social Media Usage	0.05	0.029	0.989	0.008
Sleep Quality Index	0.088	0	0.972	0
Perceived Stress Scale	0.152	0	0.925	0
Emotional Stability	0.118	0	0.945	0

Correlation Analysis

Correlation Between Social Media Usage and Perceived Stress

Correlation			Perceived Stress	Social Media Usage
Spearman's rho	Perceived Stress	Correlation Coefficient	1.000	.174**
		Sig. (1-tailed)	.	.000
		N	363	363
	Social Media Usage	Correlation Coefficient	.174**	1.000
		Sig. (1-tailed)	.000	.
		N	363	363

** Correlation is significant at the 0.01 level (1-tailed)

Correlation Between Social Media Usage and Emotional Stability

Correlation			Social Media Usage	Emotional Stability
Spearman's rho	Social Media Usage	Correlation Coefficient	1.000	.257**
		Sig. (1-tailed)	.	0
		N	363	363
	Emotional Stability	Correlation Coefficient	.257**	1.000
		Sig. (1-tailed)	0	.
		N	363	363

** Correlation is significant at the 0.01 level (1-tailed).

Correlation Between Social Media Usage and Sleep Quality

Correlation			Social Media Usage	Sleep Quality
Spearman's rho	Social Media Usage	Correlation Coefficient	1.000	.237**
		Sig. (1-tailed)	.	0
		N	363	363
	Sleep Quality	Correlation Coefficient	.237**	1.000
		Sig. (1-tailed)	0	.
		N	363	363

** Correlation is significant at the 0.01 level (1-tailed).

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3.5 Regression Analysis Social Media Usage and Perceived Stress

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1720.424	1	1720.424	25.323	<.001 ^b
	Residual	24525.576	361	67.938		
	Total	26246	362			

Regression Analysis Social Media Usage and Emotional Stability

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	102.035	1	102.035	7.958	.005 ^b
	Residual	4628.632	361	12.822		
	Total	4730.667	362			

Regression Analysis Social Media Usage and Sleep Quality

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1063.09	1	1063.09	37.56	<.001 ^b
	Residual	10217.72	361	28.304		
	Total	11280.81	362			

Author Contributions

Conceptualization, M.P.; methodology, M.P.; formal analysis, M.P.; investigation, M.P.; data curation, M.P.; writing—original draft preparation, M.P.; writing—review and editing, A.G.; supervision, A.G. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee for Students Projects, Sri Ramachandra Institute of Higher Education and Research (Approval Code: CSP-III/24/DEC/14/529; Date of Approval: 14 December 2024).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data presented in this study are available on reasonable request from the corresponding author. The data are not publicly available due to privacy and ethical restrictions.

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Conflicts of Interest

The authors declare no conflict of interest.

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