

Social Media Addiction and Its Association with Sleep Quality among Medical Students in A Medical College in Tamil Nadu, India

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ABSTRACT

Background: Medical students' social media addiction disrupts and lowers sleep quality, hurting their everyday life and academic performance, stressing the need for effective ways to promote their well-being and achievement. The study aims to estimate the prevalence of social media addiction and to find out the association with sleep quality among medical students in private medical college.

Methodology: A cross-sectional study involving 792 MBBS students from a private medical college in Chengalpattu district, Tamil Nadu, utilized the Bergen Social Media Addiction Scale (BSMAS) to assess social media addiction and the Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep quality. Data were collected through a pre-tested semi-structured questionnaire and analysed using SPSS version 25.

Results: The study revealed a 17.7% prevalence of social media addiction among medical students, significantly associated with poor sleep quality, female gender, and morning social media use. Other factors included dependence on social media for updates, more than three hours of daily use, eye discomfort, Snapchat use, compulsion to post at least six photos and subjective sleep quality, sleep latency, duration, disturbances, use of sleeping medication, and Daytime dysfunction.

Conclusions: Research demonstrates a significant correlation between social media addiction and poor sleep quality among medical students, highlighting the need for focused interventions and awareness activities to counteract its harmful influence.

Key-words: sleep hygiene, selfies, insomnia, feedback loop, social networking sites, cross-sectional study

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INTRODUCTION

In the digital age, social media platforms have transformed global interaction, information sharing, and connectivity. With 4.8 billion users as of 2023, platforms like Facebook, Instagram, Twitter, and Snapchat significantly influence social interactions and behaviors. This accounts for 59.9% of the global population, with around 410,000 new users joining daily and 4.7 every minute.¹

Indians spend an average of 2.4 hours daily on social media. Young adults aged 18 to 24 are especially active, with 97.2 million on Facebook and 69 million on Instagram.² Social media use can lead to addiction, driven by dopamine. Feedback loop mechanisms within the dopamine reward system keep users engaged.³

Excessive social media use can lead to loneliness, insomnia, anxiety, depression, and poor academic performance, showing these platforms are insufficient to support young people's well-being.⁴ Sound sleep is vital for health, with young adults needing 7 to 9 hours per night.⁵ Sleep disruption and inadequate duration are linked to daytime sleepiness and negative health effects, including impaired cognitive performance, mood, immune function, cardiovascular risk, weight, and metabolism.⁶ Blue light-emitting devices, combined with engaging content and social interactions, can disrupt the circadian rhythm and delay sleep onset, resulting in inadequate sleep duration and poor sleep quality.⁷

Psychologists are increasingly focused on the effects of social media, especially selfie-taking and posting, on young adults. Seeking validation through "likes" is crucial for identity formation and social interaction but can lead to mental health issues and social media addiction.⁸ Students transitioning from high school to medical college may face challenges such as depression, alexithymia, burnout, and anxiety.⁹

Medical students facing a rigorous academic workload may encounter psychological challenges. Social media addiction can disrupt their daily activities and studies, affecting their future effectiveness in serving society.¹⁰ The study aims to estimate the prevalence of social media addiction and its association with sleep quality among medical students at a private medical college.

METHODOLOGY

Study Area and Study Population: The research was carried out at a tertiary private medical college in the Chengalpattu district of Tamil Nadu. The study participants were medical students enrolled in MBBS courses. The college admits 250 students annually, and in total, there were 1000 medical students across all academic years studying at the college.

The objectives and privacy aspects of the study were explained to the students. The research was con-

ducted over a period of 6 months between November 2023 and April 2024. Out of the 1000 medical students, 920 provided informed consent and took part in the study. The remaining 80 students were either unavailable for data collection or chose not to participate in the study.

Data Collection Tools:

Bergen Social Media Addiction Scale: The prevalence of social media addiction was assessed using Bergen Social Media Addiction Scale (BSMAS)¹¹ which is a succinct and efficient instrument for assessing the degree of social media addiction. It comprises six items, each scored on a 5-point Likert scale from 1 ("very rarely") to 5 ("very often"). These items measure the level of obsession with social media, including the time spent contemplating or planning to use social media, the urge to use it more, using social media to escape personal issues, failed attempts to reduce usage, feelings of restlessness or distress when prevented from using it, and the adverse impact of excessive use on work or studies. The total scores can vary from 6 to 30, with a higher score signifying a greater degree of Problematic Social Media Use (PSMU). The BSMAS score of 24 has been identified as the optimal cut-off point, according to the gold standards of clinical diagnosis.¹²

A pre-tested semi-structured questionnaire was utilized to obtain information about the socio-demographic data and other variables related to social media addiction and sleep.

Pittsburgh Sleep Quality Index (PSQI): Pittsburgh Sleep Quality Index (PSQI) was used to assess the sleep quality of participants. Each of the questionnaire's 19 self-reported items belongs to one of seven subcategories: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. In scoring the PSQI, seven component scores were derived, each scored 0 (no difficulty) to 3 (severe difficulty). The component scores are summed to produce a global score (range 0 to 21). Higher scores indicate worse sleep quality. 0–4 indicating "good" sleep and 5–21 indicating "poor" sleep.¹³

Data Collection Method: The student representative from each academic year was the nodal person for the study. Investigators briefed them about the study. Only through the student's representatives, the investigators engaged with students in an informal environment in the college premises and conducted interview. Confidentiality agreement and informed consent was signed by each of them before enrolling in the study. Since student representative was the nodal person involved, the investigators/faculties were not aware of the identity of the students who did not participate in the study.

Data Analysis: Data was entered in Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics were used to present data in the form of ta-

bles. An Independent sample T-test and ANOVA were used to find the association between social media addiction - Sleep quality and other related variables. Linear regression Analysis was used to eliminate the confounders and determine the predictors of social media addiction.

Ethical Approval and Informed Consent: Ethical approval was obtained from the Institutional Ethical Committee of the tertiary private medical college. Informed consent was obtained from each study participant before enrolling them.

RESULTS

The mean age of the study participants was 20.68 ± 1.97 years. Out of the 920 participants, 792 individuals reported using social media within the past two months for non-academic or non-job-related purposes. Most participants were female (62.1%), among which, 17.7% were addicted to social media. The majority of them used mobile devices to use social media. One-third of the participants (34%), were obsessed with engaging in social media, first thing when they woke up in the morning. The majority of individuals (80.1%) use social media to stay informed about what happened. An interesting finding was that 29.3% of social media users reported that

they were pulled in by the mysterious universe of social media. (Table 1)

It was found that 21.7% of individuals occasionally spend an entire night on social media and 30.3% of individuals used social media long enough to cause their eyes to get watering or burning. (Table 1)

The most used social media network was WhatsApp (87.9%), followed by Instagram (82.8%) and Snapchat (47%). Regarding social media usage, 25% spent over three hours daily. Around 3.3% of the study participants, were unable to resist the urge to take selfies "around the clock" and were psychologically compelled to post at least 6 of those photos per day. (Table 2)

On bivariate analysis, the factors which were found to have a statistically significant association ($P < 0.05$) with social media addiction were: female gender, using social media first thing in the morning, using it to keep updated about the events, feeling captivated about social media, spending more than 3 hours a day, using social media so much that their eyes start watering, interpersonal relationships getting affected by social media usage, using Snapchat, obsessed to take at least 3 selfies per day without posting them on social media and those who feel unable to resist the urge to take selfies "around the clock" and post at least 6 of those photos per day. (Table 3 & 4)

Table 1: Variable related to social media usage among the study participants (N = 792)

| Variable | Participants (%) |
|--|------------------|
| Female Gender | 492 (62.1) |
| Watched social media during class hours | 354 (44.7) |
| Not even felt hunger and thirst when utilizing social media | 120 (15.2) |
| Used social media first thing in the morning | 276 (34.8) |
| Used social media to keep informed about what happens | 634 (80.1) |
| Used social media even when walking on the road/driving | 142 (17.9) |
| Captivated in the mysterious world of social media | 232 (29.3) |
| Sometimes used social media the whole night | 172 (21.7) |
| Sometimes spent time on social media so that my eyes start watering or burning | 240 (30.3) |
| Utilization of social media too much it affects personal relationships | 134 (16.9) |

Table 2: Variable related to social media addiction among the study participants (N = 792)

| Variable | Participants (%) |
|--|------------------|
| Type of Social Media Application Used (Multiple Response) | |
| WhatsApp | 696 (87.9) |
| Facebook | 162 (20.5) |
| Snapchat | 372 (47) |
| Instagram | 656 (82.8) |
| The primary motive for the utilization of social media | |
| Watch random reels/feeds on social media | 410 (51.8) |
| To post photos/videos/feeds on my pages | 44 (5.6) |
| Stay in touch with family/friends | 338 (42.7) |
| Average number of hours spent on social media each day | |
| More than 3 Hours | 198 (25) |
| 1-3 Hours | 418 (52.8) |
| Less than 1 Hour | 176 (22.2) |
| Felt sad/depressed/offended when got a lesser likes/comment for my photos/videos on my profile | 56 (7.1) |
| Took at least 3 selfies a day which were not posted on social media | 112 (14.1) |
| Posted (on social media) at least 3 selfies a day | 28 (3.5) |
| Unable to resist the urge to take selfies "around the clock" and post at least 6 of those photos per day | 26 (3.3) |
| Mistakenly thought that my mobile phone was ringed | 294 (37.1) |
| Social media addiction | 140 (17.7) |

Table 3: Association between social media addiction and variables related to a pattern of social media usage

| Variable | Bergen Social Media Addiction Scale (Mean ± SD) | | P value |
|---|---|--------------|---------|
| | Male | Female | |
| Gender | | | |
| | 17.93 ± 5.58 | 16.56 ± 5.58 | 0.001* |
| Pattern of Social Media Use | Yes | No | |
| Used social media first thing in the morning | 18.41 ± 5.58 | 16.88 ± 5.58 | 0.000* |
| Used social media to keep informed about what happens | 18.8 ± 5.58 | 17.07 ± 5.58 | 0.001* |
| Captivated in the mysterious world of social media | 18.74 ± 5.58 | 16.86 ± 5.58 | 0.000* |
| Occasionally used social media the whole night | 18.97 ± 5.58 | 16.98 ± 5.58 | 0.000* |
| Occasionally spend time on social media so that my eyes start watering or burning | 18.04 ± 5.58 | 17.14 ± 5.58 | 0.041* |
| Utilization of social media too much it affects personal relationships | 19.13 ± 5.58 | 17.06 ± 5.58 | 0.000* |

Independent sample T-test used to test the statistical significance at 95% Confidence interval.

* - P<0.05 at 95% CI.

Table 4: Association between social media addiction and variables related to social media addiction.

| Variable | BSMAS (Mean ± SD) | P value |
|---|-------------------|---------------|
| Type of Social Media Application used | | |
| WhatsApp | | |
| Yes | 17.42 ± 5.73 | 0.899 |
| No | 17.34 ± 5.35 | |
| Facebook | | |
| Yes | 17.21 ± 6.34 | 0.611 |
| No | 17.47 ± 5.50 | |
| Snapchat | | |
| Yes | 18.18 ± 5.89 | 0.000* |
| No | 16.74 ± 5.40 | |
| Instagram | | |
| Yes | 17.34 ± 5.57 | 0.409 |
| No | 17.78 ± 6.20 | |
| Took at least 3 selfies a day which were not posted on social media | | |
| Yes | 18.73 ± 5.18 | 0.008* |
| No, & I do not take selfies | 17.20 ± 5.73 | |
| Unable to resist the urge to take selfies "around the clock" and post at least 6 of those photos per day | | |
| Yes | 17.51 ± 5.68 | 0.009* |
| No & No, I don't take selfies | 14.54 ± 4.84 | |
| The primary motive for the utilization of social media | | |
| Watch random reels/feeds on social media | 17.70 ± 5.59 | 0.13 |
| To post photos/videos/feeds on your pages | 19.16 ± 5.16 | |
| Stay in touch with family/friends | 16.83 ± 5.80 | |
| Average number of hours spent on social media each day | | |
| More than 3 Hours | 18.27 ± 6.01 | 0.007* |
| 1-3 Hours | 16.82 ± 5.18 | |
| Less than 1 Hour | 17.85 ± 6.26 | |

BSMAS - Bergen Social Media Addiction Scale

Independent sample T-test analysed in serial number 1-3 variables and ANOVA serial number 4 & 5 variables were used to test the statistical significance at 95% Confidence interval. * - P<0.05 at 95% CI.; SD - Standard deviation

On bivariate analysis using ANOVA, the factors that were found to have a statistically significant association (P<0.05) with social media addiction and components of sleep quality were subjective sleep quality, habitual sleep efficiency sleep latency, duration, disturbances and use of sleeping medication, a daytime dysfunction. (Table 5)

On linear regression analysis, the following factors were found to have a statistically significant association (P<0.05) with social media addiction: female gender, using social media first thing in the morning, using it to keep updated about events, spending more than 3 hours a day, using social media too much-causing watering and burning of eyes, using

Snapchat and those who feel unable to resist taking Selfies 24/7 & post at least 6 photos in social media.

The following components of PSQI were found to have a statistically significant association (P <0.05) with social media addiction according to linear regression; subjective sleep quality, sleep latency, sleep duration, sleep disturbances, use of sleeping medication, and daytime dysfunction. (Table 6)

There was a statistically significant positive correlation between the Bergen Social Media Addiction Scale score and the Pittsburgh Sleep Quality Index score (Pearson correlation 0.627 & P value <0.05)

Table 5: Association between Social Media addiction and Components of sleep quality variables

| Components of PSQI Scale | BSMAS (Mean ± SD) | P Value |
|-----------------------------------|-------------------|---------------|
| Subjective Sleep Quality | | |
| Very Good | 15.22 ± 5.54 | 0.000* |
| Fairly Good | 17.17 ± 5.25 | |
| Fairly Bad | 20.09 ± 5.49 | |
| Very Bad | 24.95 ± 3.61 | |
| Sleep Latency | | |
| No Difficulty | 15.79 ± 5.92 | 0.000* |
| Mild Difficulty | 17.42 ± 4.55 | |
| Moderate Difficulty | 19.96 ± 5.29 | |
| Severe Difficulty | 21.88 ± 5.72 | |
| Sleep Duration | | |
| >7 Hours | 16.70 ± 5.85 | 0.000* |
| 6-7 Hours | 16.63 ± 5.32 | |
| 5-6 Hours | 19.94 ± 5.33 | |
| <5 Hours | 23.82 ± 4.44 | |
| Habitual Sleep Efficiency | | |
| >85 % | 17.01 ± 5.47 | 0.000* |
| 75-84% | 17.22 ± 5.74 | |
| 65-74% | 23.29 ± 5.53 | |
| <65% | 24.17 ± 3.78 | |
| Sleep Disturbances | | |
| No Difficulty | 14.97 ± 6.47 | 0.000* |
| Mild Difficulty | 17.01 ± 5.20 | |
| Moderate Difficulty | 20.42 ± 5.20 | |
| Severe Difficulty | 26.71 ± 2.55 | |
| Use of Sleeping Medication | | |
| Not in the Past Month | 16.72 ± 5.48 | 0.000* |
| Less than once a week | 19.37 ± 5.39 | |
| Once or twice a week | 23.81 ± 3.08 | |
| ≥3 times a week | 25.56 ± 3.24 | |
| Daytime Dysfunction | | |
| No Difficulty | 15.96 ± 5.84 | 0.000* |
| Mild Difficulty | 18.08 ± 4.84 | |
| Moderate Difficulty | 20.65 ± 5.14 | |
| Severe Difficulty | 23.08 ± 5.56 | |

BSMAS - Bergen Social Media Addiction Scale

Independent sample T-test used to test the statistical significance at 95% Confidence interval. * - P<0.05 at 95% CI; SD – Standard deviation

DISCUSSION

Social media addiction among medical students is a growing concern due to their academic workload. The constant need to stay informed and updated can lead to excessive use of social media platforms, which can interfere with the focus on learning and daily activities. The constant engagement with social media platforms often leads to disrupted sleep patterns and diminished sleep quality. The phenomenon of ringxiety, also known as phantom vibration syndrome, illustrates psychological impact of social media addiction on individuals.

Our research indicated that among medical students, only 17.7% suffered from social media addiction. Almost Similar findings were observed in a study done by Hy et al (22.3%) and Eichenberg et al (22.7%).^{14,15} Medical students, burdened by scholastic and professional expectations, commonly use social media for resources, collaboration, updates, and networking, as influenced by many circumstances.

Interestingly study done by Sserunkuuma et al and Setyowati et al shows a higher prevalence of social media addiction at 74.34% and 76% respectively.^{16,17} The difference could be variations in tools used for measurement, criteria for defining social media addiction, and sampling methodologies across studies which may have led to differences in prevalence rates. This makes it difficult to compare results across different regions and cultures.

The Present study found a notable link between social media addiction and poor sleep quality, a finding that aligns with the results study done by Sumen A et al, Levenson et al, Alsulami et al and Setyowati et al.^{6,17-19} People frequently remain up late sharing images on social media, diminishing their sleep quality. The use of social media can increase psychological, intellectual, and physical stimulation, making it harder to sleep. This trouble sleeping can lead to an increase in social media consumption, resulting in a vicious cycle that interrupts sleep even more.

The link between social media addiction and poor sleep quality in medical students can be traced back to elements like extended usage of devices to use social media during bedtime leading to sleep disturbances, mental stress and obsessing inadequate sleep hygiene habits, academic stress, and time management issues, and mental stimulation caused by exposure to blue light.^{20,21}

Female gender had a significant association with social media addiction. Similar results were obtained by Sümen A in South Turkey.¹⁸ A variety of reasons contribute to the higher prevalence of social media addiction among females. These include distinct socialization patterns, coping mechanisms, and diverse pressures such as academic pressure, interpersonal problems, and body image worries. These factors could enhance the vulnerability to addiction.¹⁵

The current research suggests a significant correlation between using social media as the first activity in the morning and social media addiction. Similar findings were reported in another study by Bengtsson et al.²² The purpose could be when people wake up, they may experience Fear of Missing Out, which is defined by a need to stay constantly linked to what other people are doing. This inclination disrupts a pleasant morning routine. This disruption can lead to dependence on social media for morning stimulation, indicating potentially addictive practices.²³

This research discovered a meaningful link between the use of social media for obtaining information about daily happenings and the onset of social media dependency. Comparable results were observed in a related study done by Tartari.²⁴ The reasons could be social media provides a platform for interactive involvement with news via comments, likes, shares, and dialogues. Users can interact with content, pose queries, and partake in discussions, thereby enhancing their comprehension of events and matters. This may lead them to use social media platforms for other purposes that may lead to dependence.²⁵

Table 6: Linear Regression Analysis to find the predictors of social media addiction

| Variable | B | 95% CI | p-value |
|--|--------|----------------|---------------|
| Female Gender | -0.775 | -1.51 to -0.39 | 0.039* |
| Going on social media is the first thing I do when I wake up in the morning | -1.293 | -2.08 to -0.49 | 0.001* |
| I like using social media to keep informed about what happens | 1.165 | 0.29 to 2.03 | 0.009* |
| The mysterious world of social media always captivates me | -0.616 | -1.51 to 0.28 | 0.178 |
| On average, people spend more than 3 hours daily on social media | 0.869 | 0.31 to 1.42 | 0.002* |
| Used social media, the whole night | 0.083 | -0.89 to 1.06 | 0.867 |
| Spending time on social media so that eyes start watering or burning | 1.005 | 0.73 to 1.93 | 0.035* |
| Using social media too much has affected personal relationships | 0.328 | -0.76 to 1.41 | 0.554 |
| Snapchat | -1.520 | -2.20 to -0.83 | 0.000* |
| Taking at least 3 selfies a day without posting them on social media | -0.820 | -1.89 to 0.25 | 0.134 |
| Unable to resist the urge to take selfies "around the clock" and post at least 6 of those photos per day | 2.710 | 0.67 to 4.74 | 0.009* |
| Subjective Sleep Quality | 1.073 | 0.49 to 1.64 | 0.000* |
| Sleep Latency | 1.021 | 0.60 to 1.43 | 0.000* |
| Sleep Duration | 1.388 | 0.84 to 1.92 | 0.000* |
| Habitual Sleep Efficiency | 0.471 | -0.18 to 1.13 | 0.160 |
| Sleep Disturbances | 1.268 | 0.53 to 2.00 | 0.001* |
| Use of Sleeping Medication | 1.313 | 0.63 to 1.99 | 0.000* |
| Daytime Dysfunction | 0.681 | 0.13 to 1.23 | 0.015* |

* - Statistically significant at 95% Confidence Interval. Adjusted R square-0.619
Regression Method Used: Enter method

The present study discovered a correlation between spending over three hours on social media and social media addiction. This finding aligns with the results of a study conducted by Sumen et al.¹⁸ The reason could be that social media platforms use sophisticated algorithms to personalize content and maintain user engagement. These platforms are better able to retain users by tailoring their feeds to personal tastes and presenting content that elicits strong responses. Over time, regular social media use becomes routine, and users may unconsciously check their accounts more often. This routine is difficult to break and contributes to the development of addictive behaviors.²⁶

The current study indicated that those who spend time on social media feel burning or watering of the eyes, which is connected with social media addiction. Similar findings were found in a study done by Warad et al.²⁷ This may be because, the extensive use of digital screens for social media on devices used throughout the day has given rise to 'digital eye strain,' a new clinical condition that impacts individuals who spend prolonged periods focused on multiple screens, whether for work or entertainment.²⁸

The present study found that among social media apps, those using Snapchat have a significant association with social media addiction. Similar findings were seen in Suwayri.²⁹ The Causes might be that Snapchat enables personal and intimate communication, and its Snap streak feature gamifies reciprocal interactions, potentially increasing time spent on the platform. Due to longer and more intense usage, Snapchat users receive greater social rewards, which may drive problematic social media behaviour.³⁰

This study noticed that those who cannot resist the desire to take selfies "24/7" and publish at least 6 photographs a day had a link with social media addiction. Opong et al and Griffiths MD et al investiga-

tion yielded similar results.^{31,32} Reasons for the activity of taking selfies may be driven by factors such as seeking validation to enhance their confidence and comparing themselves to others; these behaviors represent psychological needs and emotional desires typically associated with social media addiction patterns.³³

STRENGTH AND LIMITATION

This study addresses the highly relevant issue of social media addiction and poor sleep quality among medical students, a population that is particularly susceptible to these issues due to their demanding schedules and high-stress levels. By using a well-structured, in-depth survey and validated techniques, this investigation provides detailed insight into the scope and nature of these challenges. The findings may aid in developing targeted interventions and strategies to reduce social media addiction and improve sleep quality. This study is important in raising awareness among medical students, their parents, and policymakers about social media's significant impact on sleep and overall well-being, ultimately improving students' health and academic performance.

However, this study has some limitations. Differences in age, gender, and study year affect social media use and sleep patterns, so results from a single institution cannot be generalized to all medical students. Subjective thresholds for "social media addiction" and "poor sleep quality" as well as external factors such as academic stress, caffeine intake, exercise, mental health, lifestyle, and body image concerns further influence the results. Cultural differences and changes in social media habits also limit generalizability, while factors such as noise, lighting, and study schedules that affect sleep quality may not

be taken into account. Cross-sectional designs identify associations but not causation. Also, without longitudinal data, the temporal relationship between social media use and sleep quality remains unclear. A mixed-methods approach incorporating both quantitative and qualitative data can provide a deeper understanding of these issues.

CONCLUSION

This study highlights the significant impact that social media use has on medical students' sleep patterns, showing that excessive use can lead to addiction and affect sleep quality. This has a significant impact on students' mental and physical health, as poor sleep quality can affect academic performance and overall well-being.

The study highlights the vicious cycle between insomnia and excessive social media use, and suggests that limiting or stopping social media use a few hours before bedtime may help the body prepare for sleep. Further research is needed to develop effective strategies to manage social media addiction and improve sleep quality in medical students.

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