Impact of Social Media Usage on the Variables of Anxiety and Reward Sensitivity among Medical Undergraduates

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Abstract: *Background: As the popularity of social networking sites (SNS) is surging among the today's young generation, any proposed psychiatric conditions associated with it can pose serious public health issue, potentially becoming a global cyber-epidemic. Empirical evidence regarding the extent of SNS use and its association with the mental health status of medical students is scarce in India. On the backdrop of these situations, the present study is conducted. Objectives: To establish the relationship between social media usage and anxiety, to assess the effect of social media usage on reward sensitivity. Materials and Methods: All students from first year of MBBS to final year were included. Participants were asked to answer the questions provided in a survey format. The measures used were: a) Demographic Questionnaire b) Reward Sensitivity Measure c) Social Anxiety Measure d) Social Anxiety on Social Media Measure. Utilizing a cross-sectional design, the research involved 233 students from Shridevi Institute of Medical Sciences and Research Hospital. Results: The findings indicate a strong correlation between social media use and social anxiety, with increased usage linked to higher reward sensitivity. According to the study, users of social media have a larger chance of encountering rewarding content the more time they spend online, and the rewarding content encourages them to use social media for longer periods of time. The study highlights the importance of recognizing the potential cognitive and affective drawbacks of excessive social media use among young adults. Conclusion: While social media platforms aim to connect individuals, this study highlights their potential negative impact on mental health, particularly in promoting social anxiety and altering reward sensitivity among medical students. Recognizing these effects is crucial in developing strategies to mitigate the adverse outcomes associated with excessive social media use.*

Keywords: Reward Sensitivity, Social Anxiety, Social Media Usage

1. Introduction

Social networking sites has two sides to its operation. They are usually employed for academic excellence. But frequent use of SNS online can lead to addiction, insomnia, depression and anxiety. Studies have demonstrated that those who struggle with social anxiety prefer virtual social interactions to in-person interactions.

A technology that was first meant to foster relationships and connection has now been widely characterized as a tool for mental health concerns, bullying, peer pressure, and false perceptions of other people. Despite a growing body of research that suggests social networking sites (SNSs) have an addictive potential and describes the behavioural patterns of "problematic" or "compulsive" SNS use, studies are few and don't explain the conditions that cause compulsive SNS use to emerge or how it is maintained. (1). This study aims to establish the relationship between social media usage and anxiety, and to assess the effect of social media usage on reward sensitivity among medical undergraduates. Understanding the impact of social media on mental health can inform interventions and policies to mitigate negative outcomes among medical students, who are particularly vulnerable due to academic pressures.

2. Literature Survey

Based on a study conducted by Wadsley et al in 2022, problematic use and excessive checking were linked to the need for approval from others, and SNS use is best understood as a habit motivated by a need for social benefits. (2)

A cross-sectional study conducted on college students in Bangalore concluded that SNS has two sides to its operation. They are employed due to their academic excellence. Frequent use of social networking sites online can lead to addiction, anxiety, insomnia and depression. (3)

In study conducted by Soohinda et al in 2021, Young adults who used social media were likely to engage in social comparison, which was detrimental for their mental health and made them unsatisfied with their lives. (4)

A integrative review done by Marrroquin proposed that the rate at which affective disorders like depression and anxiety develop and persist is said to have a reciprocal link with the person's social environment. (5)

Based on a systematic review by Emily et al in 2021, numerous studies have demonstrated that those who struggle with social anxiety prefer virtual social interactions to in-person interactions and use social media more problematically. (6)

According to a cross-sectional study conducted in New Delhi, medical students face significantly higher levels of stress, which negatively affects their capacity to perform well academically as well as their physical and mental health. (7)

A study conducted on patterns of mobile technology habits in young adults by Wilmer et al, suggests that cognizing the effects of smartphone and mobile device use on cognitive and affective outcomes is essential to recognize the potential drawbacks of excessive use of this technology. (8)

3. Objectives

- To establish the relationship between social media usage and anxiety
- To assess the effect of social media usage on reward sensitivity

4. Materials and Methods

- Study design: Cross-sectional Study
- Duration of the study: 4 months
- Source of Data: Medical undergraduates studying in SIMS & RH

Inclusion criteria:
Students from first year of MBBS to final year will be included in the study.

Exclusion criteria:
Students who are already diagnosed with a mental illness or on treatment

Sampling method: Stratified random sampling method that clubs items of whole population (MBBS students from 1st year to final year) in to different groups from 1st year to final year, called strata. From each group, 60 students will be randomly selected and data will be collected from them.

Sample size: 233 students.

Justification for sample size chosen: The sample size is calculated using a study conducted in India by Kadavala et al in 2021.The prevalence rate of social anxiety in social media users was found to be 67.63%.95% confidence interval and 5% marginal error, the sample size is,

Sample size(n) $= \frac{Z^2_{1-\alpha/2}*p*(1-p)}{d^2} = \frac{(1.96)^2*0.68*0.32}{5^2} = 232.20 \approx$ 233 students

Where,
$Z^2_{1-\alpha/2}$ = standard normal variate = 1.96
p = prevalence rate of social anxiety in social media users was found to be 67.63%.
d = Marginal error = 5%

Method of collection of data:
Participants will be asked to answer the questions provided in a survey format.

4.1 Measures

a) Baseline Information

b) Reward Sensitivity Measure (Carver & White, 1994):
- The Behavioral Activation System (BAS) is composed of three subscales measuring: drive, fun- seeking and reward responsiveness
- It is a 20-item questionnaire rated on a 4-point Linkert scale
- Items will be summed to determine a scale score, 0-25 for Low BAS, 25-33 for medium BAS and more than 33 for High BAS, with lower scores representing high levels of reward sensitivity

c) Social Anxiety Measure (Mattrick & Clarke, 1998):
- The Social Interaction Anxiety Scale (SIAS) is developed to measure social anxiety across various situations.
- This measure contains 20 items, participants will respond to statements on a 5-point Likert scale.
- Possible scores range from 0 to 80, the cut-off score being 36, a score of 36 or higher suggests a diagnosis of social anxiety.

d) Social Anxiety on Social Media Measure (Alkis et al, 2017):
The scale comprises of 21 items that measures how often individuals experience anxiety in varying online situation through a 5- point Likert scale where 1 indicates never and 5 indicates always.

4.2 Statistical Methods

Statistical software SPSS (25.0 version) will be used to perform following statistical analysis.
- Alpha will be set as 0.05 level.
- Analysis of frequency and percentage analysis will be used.
- Descriptive statistics such as mean, standard deviation and range will be used to describe the outcome measure if the different variables.
- Summary of Hierarchical Regression Analysis for Variables predicting Social Anxiety
- Correlation analysis of social media use, and social anxiety
- Chi square test will be used to find the significant association between sociodemogramic variables
- The Ms-Excel and Word will be used to generate tables and graphs
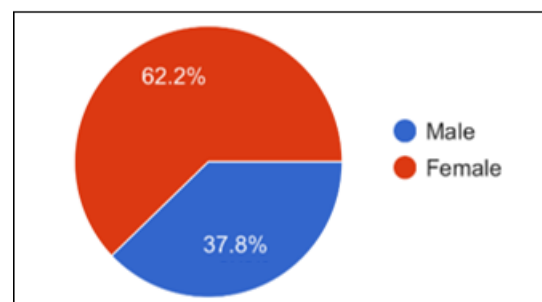
5. Results
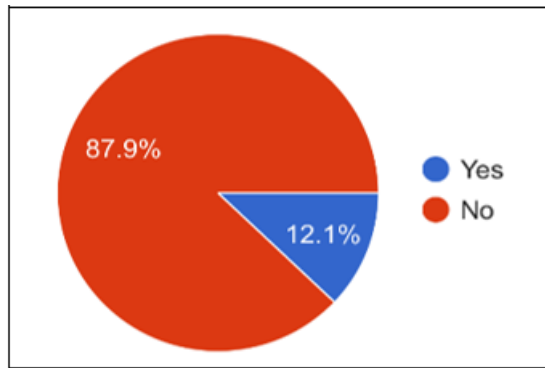

Figure 1: Gender Distribution
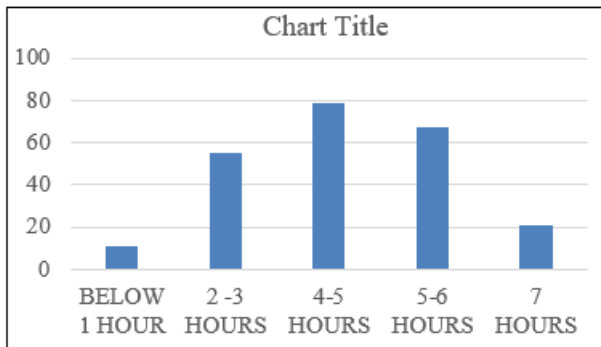
Figure 2: Past h/o psychiatric illness

Figure 3: Number of hours spent on social media

Table 1: Duration of social media usage

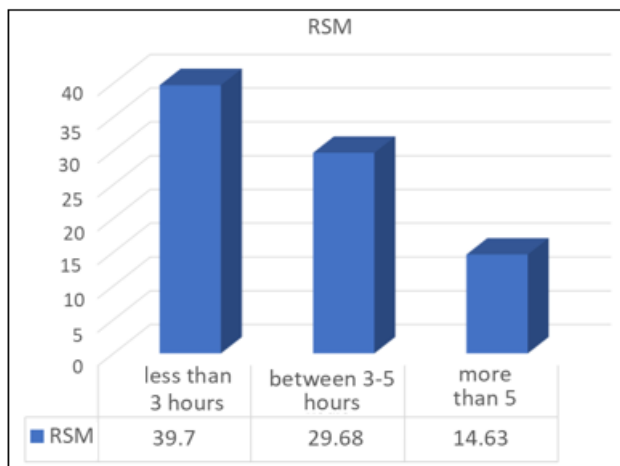|	
Below 1 hour	11
2- 3 hours	55
4- 5 hours	79
5- 6 hours	67
7 hours	21

Figure 4: Reward Sensitivity Measure

Correlation coefficient r is -0.99 which shows a negative correlation between the two variables

Table 2: RSM Score

Duration of Social Media Usage	RSM
Less than 3 hours	39.7
Between 3- 5 hours	29.68
More than 5	14.63
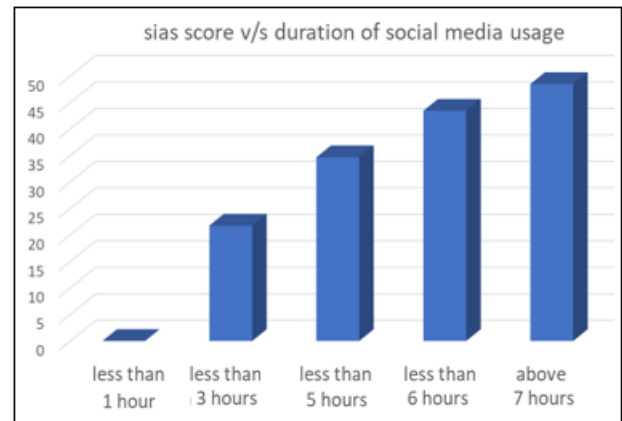
Figure 5: Social Interaction Anxiety Score

Table 3: SIAS Score

Duration of Social Media Usage	SIAS Score
Less than 1 hour	0
Less than 3 hours	21.78
Less than 5 hours	34.67
Less than 6 hours	43.45
After 7 Hours	48.49

- Applying Pearson's correlation to the duration of social media usage and SIAS score the correlation coefficient -r – comes out to be 0.99 which shows highly significant positive correlation among the two variables.
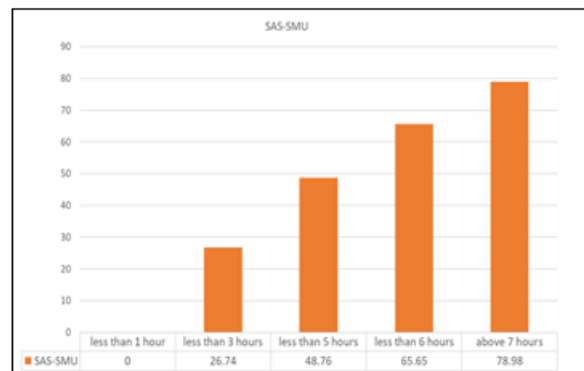

Figure 6: Social Anxiety score on Social media usage

Table 4: SAS-SMU score

Duration of Social Media Usage	SAS- SMU
Less than 1 hour	0
Less than 3 hours	26.74
Less than 5 hours	48.76
Less than 6 hours	65.65
After 7 Hours	78.98

6. Discussion

As can be seen in the bar chart provided, there is an inverse relation between RSM scores and time of consuming social media. Among media users, mean RSM score was highest for those using social media < 3 hours/day (39.7), followed by use of 3-5 (29.68) and >5 hrs per day.

This result is consistent with previous research indicating shared neural processes involved in social media use and the brain's reward system. A study conducted by Lin et al. in 2016 observed lower dopamine D2/D3 receptor availability within the striatum; a brain area associated with reward processing

between those who scored higher as having an 'addiction' to social media (12).

Of all the respondents, those who use social media for less than one hour a day had an average SIA rating of around 5. Those people who spend more than seven hours every day on social media had the highest average score at around 50 of any group. These findings are consistent with previous research which shows that participation in online conversations exclusively may make it difficult for individuals to cope with real-life social encounters and so even intensify their social anxiety.

7. Conclusion

Although connecting people is the central idea of all social media platforms, this has turned out to be a double-edged sword because it also serves as a forum for jealousy and unfavorable social comparisons.

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