

## Impact of Daily Social Media Usage on Adolescent Mental Health: A Prospective Study

Richa Choudhary<sup>1\*</sup>

### ABSTRACT

**Background:** Adolescence is a crucial developmental stage marked by psychological vulnerability, and in today's digital age, social media plays a pivotal role in shaping adolescent behavior and mental health. While social platforms offer avenues for interaction and expression, excessive usage has been linked to adverse psychological effects such as depression, anxiety, and stress [1][2]. This study investigates the correlation between daily social media use and mental health outcomes among adolescents in Bihar, India. **Materials and Methods:** A prospective study was conducted at Katihar Medical College & Hospital, Bihar, India, over a 9-month period, involving 80 adolescents aged 13–19 years. Participants were divided into two groups based on social media usage: Group A (<2 hours/day) and Group B (>2 hours/day). Mental health was assessed using the DASS-21 (Depression, Anxiety, and Stress Scale) [3]. Data were collected through structured interviews and self-report questionnaires. **Results:** Among the 80 participants, 42 were in Group A and 38 in Group B. Adolescents in Group B showed significantly higher levels of psychological distress, with 65.7% exhibiting moderate to severe symptoms of at least one disorder, compared to 28.6% in Group A. Mean DASS-21 scores were substantially higher for depression, anxiety, and stress in Group B [1][4][5]. **Conclusion:** This study reinforces the growing body of evidence linking excessive social media use with deteriorating mental health in adolescents [6][7]. The findings emphasize the importance of promoting healthy digital habits and incorporating awareness initiatives in schools and families to mitigate the negative psychological impacts of prolonged social media exposure.

**Keywords:** *Social Media, Adolescent, Mental Health*

Adolescence is a critical developmental phase marked by rapid physical, emotional, and social transitions. In today's technologically driven world, social media platforms like Instagram, Snapchat, Facebook, and WhatsApp have become an integral part of adolescent life. While these platforms serve as tools for communication and self-expression, growing concerns have emerged over their impact on the mental well-being of adolescents [1][2].

Recent research indicates a strong association between prolonged social media exposure and various psychological disorders, particularly depression, anxiety, and stress [3][4][5].

<sup>1</sup>Clinical Psychologist, Katihar Medical College, Katihar

\*Corresponding Author

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## Impact of Daily Social Media Usage on Adolescent Mental Health: A Prospective Study

Adolescents are particularly vulnerable due to their still-developing coping mechanisms, social awareness, and emotional regulation. The *World Health Organization* has also emphasized the global rise in adolescent mental health issues, often attributing digital behavior as one of the contributing factors [2].

Several studies have confirmed that increased screen time and social media engagement are correlated with poor sleep quality, cyberbullying experiences, body image concerns, and social comparison—factors known to contribute to mood disturbances [5][6]. A meta-analysis by Marino et al. highlighted that problematic Facebook use is consistently linked with psychological distress, further reinforcing these findings [6]. Moreover, Sampasa-Kanyinga and Lewis reported that adolescents who frequently use social networking sites are more likely to report poor psychological functioning [7].

However, much of the available literature is concentrated in Western or urban settings, leaving a gap in context-specific evidence from regions like Bihar, India. Social media penetration is rapidly growing in rural and semi-urban parts of India, yet mental health awareness and access to psychological services remain limited. This study was therefore designed to evaluate the impact of social media usage on the mental health of adolescents in **Katihar Medical College & Hospital, Bihar, India**, through a structured comparative analysis of usage patterns and psychological outcomes.

By building on previous literature and assessing local variables, this study aims to contribute valuable insights for educators, healthcare professionals, and policymakers, especially in shaping preventive strategies and digital wellness programs tailored to the socio-cultural fabric of eastern India [1][2][6].

## MATERIALS AND METHODS

### *Study Design and Setting*

This was a **prospective cross-sectional observational study** conducted over a period of 9 months, at **Katihar Medical College & Hospital**, Bihar, India. The study was designed to investigate the relationship between daily social media usage and mental health outcomes among adolescents. Ethical clearance was obtained from the institutional ethics committee prior to the initiation of the study.

### *Study Population*

The target population consisted of **school and college-going adolescents aged between 13 and 19 years**, residing in Katihar and its surrounding areas. Participants were selected through a **stratified random sampling method**, ensuring an equal representation of urban and semi-urban schools/colleges.

### *Inclusion and Exclusion Criteria*

#### **Inclusion Criteria:**

- Adolescents aged 13–19 years.
- Active users of at least one social media platform.
- Provided informed consent (and parental consent for minors).

#### **Exclusion Criteria:**

- Individuals with a prior diagnosed mental health disorder.
- Adolescents on psychiatric medication or therapy.

## Impact of Daily Social Media Usage on Adolescent Mental Health: A Prospective Study

- Incomplete or inconsistent questionnaire responses.

### *Sample Size*

A total of **80 participants** were enrolled in the study. They were divided into two groups based on self-reported daily social media usage:

*Table 1*

Group	Daily Social Media Use	Number of Participants (n)
A	Less than 2 hours	42
B	More than 2 hours	38

### *Data Collection Tools*

- A **structured questionnaire** was used to collect demographic data and social media usage patterns.
- Mental health status was assessed using the **DASS-21 (Depression, Anxiety, and Stress Scale)**, a validated psychometric tool suitable for adolescents [3].
- The questionnaire was available in both English and Hindi, and assistance was provided for participants who required clarification.

### *Procedure*

After screening for eligibility, participants were briefed on the study objectives and assured of confidentiality. They then completed the questionnaire in a supervised setting. The DASS-21 responses were scored according to standard guidelines to classify the severity of depression, anxiety, and stress symptoms [3][4].

The **primary variables** assessed were:

- Daily duration of social media use
- Depression score
- Anxiety score
- Stress score

### *Statistical Analysis*

Data were entered into Microsoft Excel and analyzed using **SPSS version 26**. Descriptive statistics (mean, standard deviation, percentage) were used to summarize demographic data and DASS-21 scores. Group comparisons were made using:

- **Independent t-tests** for continuous variables (e.g., DASS scores)
- **Chi-square test** for categorical variables (e.g., gender distribution, severity categories)

A p-value of **<0.05** was considered statistically significant.

## **ANALYSIS AND DISCUSSION**

### *Overview of Findings*

This study aimed to evaluate the impact of social media usage on the mental health of adolescents using the DASS-21 scale. The participants were categorized based on their reported average daily usage of social media into two groups:

- **Group A:**  $\leq 2$  hours per day
- **Group B:**  $> 2$  hours per day

## Impact of Daily Social Media Usage on Adolescent Mental Health: A Prospective Study

Out of 80 participants:

- 42 belonged to Group A
- 38 belonged to Group B

The relationship between social media usage and **depression, anxiety, and stress** levels was explored. Statistical analysis showed that increased time spent on social media is significantly associated with higher levels of mental health issues among adolescents.

**Table 2: Distribution of Participants Based on Social Media Usage Duration**

Usage Group	Participants (n)	Percentage (%)
≤ 2 hours per day	42	52.50%
> 2 hours per day	38	47.50%

### **Depression, Anxiety, and Stress Scores Comparison**

Statistical analysis revealed significantly higher DASS-21 scores for depression, anxiety, and stress in Group B compared to Group A.

**Table 3: Mean DASS-21 scores by Group**

Parameter	Group A (≤2 hrs/day)	Group B (>2 hrs/day)	p-value
Depression	8.1 ± 4.5	16.3 ± 5.8	< 0.001
Anxiety	7.5 ± 3.9	14.9 ± 4.6	< 0.001
Stress	9.4 ± 4.7	18.6 ± 5.2	< 0.001

*Independent t-tests used. A p-value of <0.05 was considered statistically significant.*

### **Interpretation**

The results of our study are consistent with existing literature indicating that prolonged use of social media platforms correlates with higher risks of depressive symptoms, anxiety, and stress among adolescents [3][4][5]. Adolescents with higher screen time often experience feelings of social isolation, cyberbullying, and distorted self-image, which may contribute to these psychological outcomes [6].

Moreover, excessive exposure to curated and idealized portrayals of life on social platforms may foster negative social comparisons and lower self-esteem [7]. Studies by Twenge et al. and Keles et al. suggest a strong link between screen time and mental health deterioration in youth, supporting our findings [4][5].

### **Factors Influencing the Outcome**

Key contributory factors include:

- Lack of parental supervision in online behavior
- Increased exposure to cyberbullying
- Sleep disturbances due to nighttime scrolling
- Reduced physical activity and face-to-face interactions

In this study, participants in Group B also reported **lower sleep quality and reduced physical activity**, although these parameters were not quantitatively analyzed. This aligns with prior research asserting that **problematic social media use** disrupts the adolescent developmental process [6][8].

**Limitations**

While the study presents valuable insights, some limitations must be acknowledged:

- Self-reported data may introduce response bias.
- The cross-sectional nature restricts causal inference.
- Other psychosocial variables (e.g., family environment, peer pressure) were not accounted for.
- Urban vs rural disparities were not separately analyzed.

**Table 4 Comparison with Previous Studies**

Study	Sample Size	Tool Used	Key Findings
Keles et al. (2020) [5]	Meta-analysis	Mixed scales	Social media use increases depression and anxiety risk
Anjali Singh et al. (2022) [3]	100	DASS-21	Higher use linked to greater mental distress
Present Study	80	DASS-21	Consistent findings: usage >2 hrs/day linked to elevated DASS scores

**RESULTS**

**Participant Demographics**

A total of **80 adolescents** participated in the study, of which **42 were in Group A (≤2 hours of social media use per day)** and **38 were in Group B (>2 hours of social media use per day)**. The gender distribution was balanced, with 40 males and 40 females across both groups. The mean age of participants was **16.2 ± 1.4 years**, with no significant age difference between the two groups (p = 0.28).

**Table 5: Demographic Characteristics of Participants**

Variable	Group A (≤2 hrs/day)	Group B (>2 hrs/day)	Total (n = 80)
Age (years)	16.1 ± 1.2	16.3 ± 1.5	16.2 ± 1.4
Gender (Male)	21 (50%)	19 (50%)	40 (50%)
Gender (Female)	21 (50%)	19 (50%)	40 (50%)
School Type	20 (47.6%)	18 (47.4%)	38 (47.5%)
College Type	22 (52.4%)	20 (52.6%)	42 (52.5%)

**DASS-21 Scores and Comparison Between Groups**

The DASS-21 scale measured depression, anxiety, and stress levels across both groups. **Group B** (adolescents using social media for more than 2 hours daily) exhibited significantly higher scores for all three parameters compared to **Group A**.

**Frequency of Mental Health Symptoms**

Participants in **Group B**, who used social media for more than 2 hours per day, had a higher frequency of mental health symptoms. **Depression, anxiety, and stress** levels were notably higher among these adolescents, with many reporting **moderate to severe** symptoms on the DASS-21 scale.

**Table 6: Frequency of Mental Health Symptoms by Severity**

Severity	Group A ( $\leq 2$ hrs/day)	Group B ( $> 2$ hrs/day)
<b>Depression</b>		
Mild	15 (35.7%)	4 (10.5%)
Moderate	10 (23.8%)	8 (21.1%)
Severe	4 (9.5%)	15 (39.5%)
<b>Anxiety</b>		
Mild	18 (42.9%)	7 (18.4%)
Moderate	9 (21.4%)	10 (26.3%)
Severe	5 (11.9%)	15 (39.5%)
<b>Stress</b>		
Mild	14 (33.3%)	5 (13.2%)
Moderate	11 (26.2%)	8 (21.1%)
Severe	8 (19.0%)	16 (42.1%)

**Relationship Between Social Media Usage and Mental Health Symptoms**

There was a **positive correlation** between the number of hours spent on social media daily and the severity of depression, anxiety, and stress. The highest severity scores were recorded in **Group B**, and further analysis showed that adolescents who used social media for more than 2 hours daily were at a significantly higher risk for developing mental health issues.

This finding supports the hypothesis that excessive use of social media platforms may adversely affect adolescents' psychological well-being, contributing to the increase in mental health symptoms [3][5].

**Additional Findings**

Some participants in **Group B** (those with higher social media usage) reported **poor sleep quality** and **reduced physical activity**, which may contribute to their mental health challenges. These findings suggest that social media use is often linked with lifestyle changes that negatively affect overall well-being [8][9].

Furthermore, **cyberbullying** was frequently cited as a source of anxiety and depression by many adolescents in **Group B**, reinforcing previous findings that exposure to negative online interactions can exacerbate mental health issues in youth [6].

**Statistical Analysis**

The comparison of DASS-21 scores between the two groups was statistically significant across all domains ( $p < 0.001$ ), indicating that social media usage beyond 2 hours per day is linked to a substantial increase in depressive, anxious, and stress-related symptoms.

**CONCLUSION**

This study highlights the significant impact of excessive social media use on adolescent mental health. Adolescents who spent more than 2 hours daily on social media exhibited markedly higher levels of depression, anxiety, and stress compared to those who used it for less than 2 hours. These findings suggest that prolonged social media exposure is associated with poorer mental health outcomes and may contribute to a range of psychological issues in youth. Further research is needed to explore the underlying mechanisms and to assess potential interventions to mitigate these effects.

## Impact of Daily Social Media Usage on Adolescent Mental Health: A Prospective Study

It is essential to raise awareness about the risks of excessive social media use and promote healthier online habits among adolescents, with a focus on balancing screen time with other activities that support mental well-being.

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### Conflict of Interest

The author(s) declared no conflict of interest.

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