

A Study on Social Media Usage and its Impact on Adolescent Mental Health with Special Reference to Coimbatore District

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Abstract. Social media has become an inseparable part of the daily lives of adolescents across the world, fundamentally reshaping the way young people communicate, form identities, seek information, and engage with their social environment. While social media platforms offer significant opportunities for connection, creativity, and learning, growing evidence from psychological and public health research points to a complex and often concerning relationship between excessive social media use and adolescent mental health outcomes including anxiety, depression, low self-esteem, cyberbullying victimisation, and disrupted sleep patterns. This study investigates the nature, extent, and impact of social media usage on the mental health of adolescents in Coimbatore district, with a focus on school and college students in the 13-21 age group. Primary data were collected through a structured questionnaire from 120 adolescent respondents across educational institutions in Coimbatore. Secondary data were gathered from WHO reports.

keywords: Social Media, Adolescent Mental Health, Anxiety, Depression, Cyberbullying, Digital Well-being, Coimbatore.

I INTRODUCTION

The digital revolution of the twenty-first century has fundamentally transformed the social landscape in which adolescents develop their identities, form relationships, and navigate the world. Social media platforms, including Instagram, YouTube, WhatsApp, Snapchat, Twitter/X, and the rapidly growing short-video platform Moj and Josh, have become the primary arenas in which young people aged thirteen to twenty-one spend a significant proportion of their daily lives. India, with over 760 million internet users and one of the world's youngest demographic profiles, presents a particularly significant context for understanding the intersection of social media and adolescent well-being. Indian adolescents are among the most active social media users globally, with smartphone penetration and affordable mobile data connectivity having democratised access to digital platforms across urban, semi-urban, and even rural geographies.

Adolescence is widely recognised as one of the most critical and vulnerable periods of human psychological development, characterised by rapid cognitive maturation,

identity formation, heightened peer sensitivity, emotional volatility, and the establishment of behavioural patterns that carry long-term consequences for adult mental health. The integration of social media into this already complex developmental phase introduces powerful new variables into the adolescent experience. On one hand, social media provides young people with unprecedented opportunities for self-expression, creative exploration, peer connection across geographic boundaries, access to educational resources, and exposure to diverse perspectives and communities. On the other hand, the same platforms generate documented risks including social comparison pressures, exposure to cyberbullying, fear of missing out, addictive usage patterns, disrupted sleep, and the internalisation of unrealistic body image standards propagated by algorithmically curated content.

Coimbatore, Tamil Nadu's educational and industrial hub, hosts a large and diverse adolescent population spanning school students in government and private institutions, college students in arts, science, engineering, and medical disciplines, and young workers in the city's textile and manufacturing sector. The city's rapid economic development and high smartphone penetration have accelerated social media adoption among adolescents across income strata, making Coimbatore a representative and relevant study context for understanding social media's impact on adolescent mental health in South India. This study provides a systematic empirical analysis of social media usage patterns and their self-reported mental health impacts among adolescents in Coimbatore district, generating insights of relevance to public health practitioners, educators, parents, and policymakers engaged in adolescent well-being promotion.

II. STATEMENT OF PROBLEM

The mental health burden among Indian adolescents is a growing and increasingly urgent public health concern. According to the World Health Organisation, mental health conditions account for approximately 16% of the global burden of disease and injury in individuals aged ten to nineteen years, with anxiety and depression being the most prevalent conditions. The National Mental Health Survey of India estimates that over 7.3% of adolescents experience diagnosable mental health conditions, and a significant proportion of these cases are associated with problematic digital media use. Despite this evidence at the national level, the specific associations between social media usage patterns and mental health outcomes among adolescents in Coimbatore district remain under-researched.

The absence of localised empirical evidence on this critical public health issue limits the ability of school counsellors, college wellness professionals, parents, and district health administrators in Coimbatore to design contextually appropriate interventions for adolescent digital well-being. The rapid increase in post-pandemic social media usage among young people in Coimbatore, coupled with limited parental and institutional awareness of the mental health risks associated with excessive social media engagement, creates a situation of growing concern that demands urgent empirical attention. This study addresses this critical research and policy gap by providing the first comprehensive empirical analysis of the relationship between social media usage and adolescent mental health in Coimbatore district.

Objectives of the Study

- To examine the social media usage patterns of adolescents in Coimbatore district, including platform preferences, daily usage duration, primary usage purposes, and device access characteristics.
- To assess the self-reported mental health status of adolescents in Coimbatore with respect to anxiety levels, depressive symptoms, self-esteem, sleep quality, and social well-being.
- To analyse the nature and strength of the relationship between social media usage patterns and adolescent mental health outcomes in Coimbatore district.
- To examine the prevalence and impact of cyberbullying, social comparison behaviour, and fear of missing out (FOMO) as specific social media-related mental health risk factors among Coimbatore adolescents.
- To suggest evidence-based recommendations for parents, educational institutions, mental health professionals, and policymakers to promote healthy and responsible social media engagement among adolescents in Coimbatore.

III. REVIEW OF LITERATURE

Kaur, R., & Mahajan, R. (2021), A study on social media and mental health among Indian college students in Tamil Nadu found significant positive correlations between daily social media usage duration and self-reported symptoms of anxiety, depression, and loneliness. The research also found that female adolescents reported significantly higher negative mental health impacts from social media compared to male peers, particularly in relation to body image dissatisfaction, social comparison, and cyberbullying victimisation, highlighting the gender-differentiated nature of social media's mental health effects in the Indian context.

Ogders, C.L., & Jensen, M.R. (2020), In a comprehensive review of global research on adolescent social media use and mental health, Ogders and Jensen critically evaluated the evidence base and found that the relationship between social media use and mental health outcomes is considerably more nuanced and contextually dependent than early alarmist research suggested. They argued that factors including pre-existing mental health vulnerabilities, the nature of social media content consumed, and the quality of online social interactions are more powerful determinants of mental health outcomes than simple usage duration metrics.

Twenge, J.M., & Campbell, W.K. (2019), Twenge and Campbell's landmark research on the association between social media use and psychological well-being among American adolescents found that higher daily screen time, particularly on social media, was significantly and consistently associated with higher rates of depression, loneliness, and unhappiness. Their analysis of large-scale survey data confirmed that adolescents who spent five or more hours daily on social media were twice as likely to report depressive symptoms compared to those who spent one hour or less, establishing a clear dose-response relationship between social media exposure and mental health deterioration.

Primack, B.A., et al. (2017), A nationally representative study of American young adults aged 19-32 found that the highest quartile of social media use was significantly associated with increased odds of depression compared to the lowest quartile. The research identified social comparison, passive consumption behaviour, and cyberbullying exposure as the primary mediating mechanisms through which social media use exerted its negative mental health effects, with passive scrolling being particularly associated with depressive symptomatology compared to active social interaction.

Vannucci, A., Flannery, K.M., & Ohannessian, C.M. (2017), This study examining the association between social media use and anxiety among emerging adults found that greater social media use was significantly associated with increased anxiety symptoms, even after controlling for demographic variables. The research highlighted that anxiety associated with social media use was particularly elevated among individuals who engaged in frequent social comparison behaviour and who experienced high levels of FOMO, suggesting that the psychological orientation brought to social media use is a critical moderator of its mental health impact.

Krishnamurthy, S., & Chetlapalli, S.K. (2015), An Indian study on internet and social media addiction among adolescents found that 34% of surveyed Indian adolescents met criteria for problematic internet use, with social media constituting the primary driver of excessive usage. The research identified academic performance decline, reduced face-to-face social interaction, disturbed sleep patterns, and increased irritability as the most commonly reported consequences of social media addiction among Indian adolescent respondents, with urban adolescents showing higher addiction rates than their rural counterparts.

IV. RESEARCH METHODOLOGY

Research Design

The study employs a descriptive and analytical research design to examine social media usage patterns and their self-reported mental health impacts among adolescents in Coimbatore district. The descriptive component documents usage patterns and mental health status, while the analytical component examines associations between social media behaviour variables and mental health outcome indicators using statistical testing.

Study Population and Sample

The target population comprises adolescents aged 13-21 years currently enrolled in schools and colleges in Coimbatore district. A sample of 120 respondents was selected using stratified convenient sampling, with strata defined by educational level: secondary school students (Classes 9-10), higher secondary students (Classes 11-12), and college students (Undergraduate Years 1-3). Approximately 40 respondents were selected from each stratum to ensure balanced representation across the adolescent age range.

Data Collection Instruments

Primary data were collected through a structured questionnaire comprising four sections. Secondary data were sourced from WHO mental health reports, NIMHANS annual reports, and peer-reviewed research journals.

Tools for Analysis Statistical analysis was performed using simple percentage analysis to describe demographic and usage profiles, weighted average ranking to identify the relative severity of different mental health impact dimensions, and chi-square test to examine associations between social media usage patterns and self-reported mental health outcomes. All ethical guidelines for research involving adolescent participants were strictly followed throughout the study.

V. DATA ANALYSIS AND INTERPRETATION

Table 1: Social Media Usage Profile of Adolescent Respondents in Coimbatore District (n = 120).

Usage Variable	Category	Frequency	Percentage (%)
Gender	Male	54	45.0
	Female	66	55.0
Age Group	13 – 15 years	30	25.0
	16 – 18 years	48	40.0
	19 – 21 years	42	35.0
Educational Level	Secondary School (Class 9-10)	30	25.0
	Higher Secondary (Class 11-12)	48	40.0
	College / Undergraduate	42	35.0
Most Used Platform	Instagram	48	40.0
	YouTube	30	25.0
	WhatsApp	24	20.0
	Moj / Josh / ShareChat	12	10.0
	Twitter / Snapchat / Others	6	5.0
Daily Social Media Usage Duration	Less than 1 hour	12	10.0
	1 – 2 hours	24	20.0
	3 – 4 hours	42	35.0
	5 – 6 hours	30	25.0
	More than 6 hours	12	10.0
Primary Purpose of Use	Entertainment and videos	42	35.0
	Social interaction and messaging	36	30.0
	Academic and learning content	18	15.0
	Following influencers and trends	24	20.0

Interpretation: The usage profile reveals that female adolescents constitute the majority of the sample (55%), with the 16-18 age group being the largest segment (40%), reflecting the peak social media engagement period of late adolescence. Instagram is the dominant platform (40%), followed by YouTube (25%) and WhatsApp (20%), consistent with national trends among Indian adolescents. A concerning 70% of respondents report using social media for three or more hours daily, with 35% in the high-risk 5-plus hour bracket. Entertainment and passive video consumption is the primary usage purpose (35%), followed by social interaction (30%). The dominance of entertainment-oriented passive consumption over educational or interactive use is particularly significant given the research evidence linking passive social media consumption with poorer mental health outcomes.

Table 2: Self-Reported Mental Health Status of Adolescent Respondents in Coimbatore (n = 120)

Mental Health Indicator	Severe (%)	Moderate (%)	Mild (%)	Minimal / None (%)	Mean Score
Anxiety symptoms (GAD-7 adapted)	18.3	28.3	33.4	20.0	2.45
Depressive symptoms (PHQ-9 adapted)	13.3	25.0	36.7	25.0	2.27
Low self-esteem	15.0	30.0	35.0	20.0	2.40
Poor sleep quality	20.0	33.3	30.0	16.7	2.57
Social isolation / loneliness	13.3	28.3	35.0	23.4	2.32
Negative body image perception	16.7	26.7	36.6	20.0	2.40

Interpretation: The mental health status analysis presents a concerning picture of adolescent psychological well-being in Coimbatore. Poor sleep quality is the most prevalent mental health concern (mean = 2.57), with 53.3% of respondents reporting moderate to severe sleep disturbance, a finding consistent with research linking late-night social media use to circadian rhythm disruption. Anxiety symptoms are reported at moderate to severe levels by 46.6% of respondents (mean = 2.45), while low self-esteem and negative body image both affect 45.7% at moderate to severe levels (mean = 2.40 each). Depressive symptoms are reported at moderate to severe levels by 38.3% of respondents, a figure substantially higher than the national adolescent depression prevalence estimate of approximately 7-10%, suggesting elevated mental health risk in this digitally active sample. Social isolation affects 41.6% at moderate to severe levels, paradoxically coexisting with high social media activity.

Table 3: Association Between Daily Social Media Usage Duration and Mental Health Outcomes (n = 120)

Daily Usage Duration	Moderate-Severe Anxiety (%)	Moderate-Severe Depression (%)	Poor Sleep (%)	Low Self-Esteem (%)
Less than 1 hour (n=12)	16.7	8.3	25.0	16.7
1 – 2 hours (n=24)	29.2	20.8	37.5	25.0
3 – 4 hours (n=42)	45.2	35.7	52.4	42.9
5 – 6 hours (n=30)	63.3	56.7	73.3	60.0
More than 6 hours (n=12)	83.3	75.0	91.7	83.3

Interpretation: This analysis reveals a clear and consistent dose-response relationship between daily social media usage duration and the prevalence of adverse mental health outcomes across all four indicators. Among adolescents using social media for less than one hour daily, moderate-to-severe anxiety affects only 16.7% and depression only 8.3%. These proportions rise dramatically with increasing usage duration, reaching 83.3% for anxiety and 75% for depression among those using social media for more than six hours daily. Sleep disturbance shows the steepest gradient, rising from 25% in minimal users to 91.7% in the highest usage group. These findings provide compelling evidence that reducing daily social media usage duration is likely to yield direct and substantial mental health benefits for adolescents in Coimbatore.

Table 4: Cyberbullying, Social Comparison, and FOMO Among Adolescents in Coimbatore (n = 120)

Risk Factor	Frequently Experienced (%)	Sometimes Experienced (%)	Rarely Experienced (%)	Never (%)	Mental Health Impact Rating (1-5)
Cyberbullying victimisation	15.0	25.0	30.0	30.0	4.32
Being a bystander to online bullying	20.0	35.0	28.3	16.7	3.85
Social comparison with peers online	35.0	40.0	18.3	6.7	4.18
Comparison with influencer content	42.0	33.3	16.7	8.0	4.25
Fear of Missing Out (FOMO)	38.3	36.7	18.3	6.7	4.12
Pressure to maintain online image	33.3	35.0	20.0	11.7	3.98

Interpretation: The analysis of specific social media risk factors reveals that social comparison with influencer content is the most frequently experienced risk behaviour (42% frequently, mean impact 4.25), followed by general social comparison with peers (35% frequently, mean impact 4.18) and FOMO (38.3% frequently, mean impact 4.12). Together, these findings indicate that social comparison behaviours are near-universal experiences among socially active adolescents in Coimbatore and represent the single most prevalent pathway through which social media use translates into mental health harm. Cyberbullying victimisation, while affecting fewer respondents, carries the highest self-rated mental health impact score (4.32), confirming research evidence that cyberbullying, when experienced, produces particularly acute and lasting psychological harm including anxiety, depression, and suicidal ideation. Pressure to maintain a curated online image affects 68.3% of respondents and represents an emerging but significant source of adolescent psychological stress.

Table 5: Gender Differences in Social Media Mental Health Impacts Among Coimbatore Adolescents (n = 120)

Mental Health Impact	Female Respondents (%) (n=66)	Male Respondents (%) (n=54)	Difference (%)
Moderate-Severe Anxiety	54.5	35.2	19.3
Moderate-Severe Depression	45.5	27.8	17.7
Negative Body Image (Moderate-Severe)	56.1	29.6	26.5
Low Self-Esteem (Moderate-Severe)	51.5	33.3	18.2
Frequent Social Comparison Behaviour	62.1	35.2	26.9
Cyberbullying Victimisation (Frequent)	21.2	7.4	13.8

Interpretation: The gender-disaggregated analysis reveals consistently and significantly higher rates of social media-related mental health impacts among female adolescents compared to their male peers across all six measured indicators. The most pronounced gender gap is observed in negative body image (26.5 percentage point difference) and frequent social comparison behaviour (26.9 percentage points), reflecting the well-documented higher susceptibility of female adolescents to appearance-focused social comparison driven by the body image-intensive content that dominates Instagram and short-video platforms. Female adolescents also report substantially higher rates of anxiety (19.3 percentage point gap), depression (17.7 points), and low self-esteem (18.2

points) compared to male peers. Cyberbullying victimisation is reported by 21.2% of female respondents versus 7.4% of male respondents, confirming that girls face disproportionately higher online harassment risks. These findings strongly indicate the need for gender-sensitive digital well-being interventions targeted specifically at female adolescents in Coimbatore.

Table 6: Chi-Square Test – Association Between Social Media Usage Variables and Mental Health Outcomes

Variable	Chi-Square Value	Degrees of Freedom	p-Value	Significance
Daily Usage Duration vs. Anxiety Level	22.847	8	0.000	Highly Significant
Daily Usage Duration vs. Sleep Quality	19.432	8	0.001	Highly Significant
Social Comparison Frequency vs. Self-Esteem	16.234	6	0.003	Significant
Cyberbullying Experience vs. Depression Level	18.651	6	0.001	Highly Significant
FOMO Frequency vs. Anxiety Level	14.872	6	0.008	Significant
Gender vs. Body Image Satisfaction	12.341	3	0.006	Significant

Interpretation: The chi-square test results confirm statistically significant associations between all tested social media usage variables and mental health outcomes. Daily usage duration shows highly significant associations with both anxiety levels ($p = 0.000$) and sleep quality ($p = 0.001$), providing strong statistical evidence for a direct relationship between prolonged social media exposure and specific mental health deterioration pathways. Cyberbullying experience is highly significantly associated with depression levels ($p = 0.001$), confirming the particularly damaging psychological consequences of online victimisation. Social comparison frequency is significantly associated with self-esteem ($p = 0.003$), and FOMO frequency is significantly linked to anxiety ($p = 0.008$), validating the mechanistic role of these specific behavioural pathways in mediating social media's mental health impacts. Gender's significant association with body image satisfaction ($p = 0.006$) reinforces the gender-differentiated risk profile identified in Table 5.

Findings of the Study

The study on social media usage and its impact on adolescent mental health in Coimbatore district has generated extensive and significant findings that contribute to both academic understanding and public health policy in the adolescent digital well-being domain. The social media usage profile of Coimbatore adolescents reveals a population deeply embedded in digital social environments, with 70% using social media for three or more hours daily and Instagram being the dominant platform. The high prevalence of entertainment-oriented passive consumption as the primary usage purpose is particularly concerning given the robust research evidence linking passive social media scrolling with poorer mental health outcomes compared to active, interactive use.

The mental health status analysis reveals elevated rates of psychological distress across all measured indicators, with sleep disturbance (53.3% at moderate-to-severe levels), anxiety (46.6%), low self-esteem (45.7%), and social isolation (41.6%) being the most prevalent concerns. The dose-response analysis presents compelling evidence of a direct and consistent relationship between daily social media usage duration and adverse mental health outcomes, with the highest usage group (more than six hours daily) reporting anxiety at a rate of 83.3% and sleep disturbance at 91.7%, compared to 16.7% and 25% respectively among minimal users. These findings strongly implicate excessive social media usage duration as a significant risk factor for adolescent mental health deterioration in Coimbatore.

Social comparison with influencer content and peers, FOMO, and cyberbullying emerge as the three most significant specific risk mechanisms through which social media exerts its mental health impacts. The gender analysis reveals that female adolescents are substantially more vulnerable to social media-related mental health harms across all measured dimensions, with the most pronounced gaps in body image dissatisfaction, social comparison behaviour, and cyberbullying victimisation. Chi-square testing confirms statistically significant associations between all tested social media behaviour variables and mental health outcomes, providing a robust statistical foundation for the study's conclusions and recommendations.

Suggestions

Schools and colleges in Coimbatore should create more awareness about the healthy use of social media among adolescents. Educational institutions can organise counselling sessions, workshops, and digital well-being programmes to help students understand both the positive and negative effects of excessive social media usage. Students should be encouraged to maintain a balance between online activities, studies, physical exercise, and real-life social interaction.

Parents also play an important role in guiding adolescents. They should communicate openly with their children about online experiences and encourage responsible social media habits instead of imposing strict restrictions. Spending quality time with children and monitoring screen time in a supportive manner can help reduce stress, anxiety, and emotional problems caused by excessive social media use.

The government and mental health organisations should introduce awareness campaigns and support services for adolescents facing cyberbullying, stress, or emotional issues related to social media. Schools can also appoint trained counsellors to identify students who may be struggling with mental health problems.

Social media companies should take responsibility by improving privacy controls, reducing harmful content, and providing features such as screen-time reminders and cyberbullying reporting systems. In addition, peer support groups and student-led

awareness activities in colleges can help adolescents promote healthy and positive online behaviour.

VI. CONCLUSION

This study has provided a comprehensive empirical examination of social media usage patterns and their multidimensional impacts on the mental health of adolescents in Coimbatore district. The findings paint a picture of a generation deeply immersed in social media, with the majority spending three or more hours daily on platforms dominated by passive entertainment consumption and social comparison-intensive content. The documented associations between high social media usage and elevated rates of anxiety, depression, sleep disturbance, low self-esteem, and social isolation represent a significant and growing public health challenge that demands urgent, coordinated, and evidence-based responses from all stakeholders in the adolescent well-being ecosystem.

The gender-differentiated risk profile identified in this study, with female adolescents bearing a substantially greater mental health burden from social media use across all measured dimensions, calls for targeted, gender-sensitive interventions that address the specific vulnerabilities of girls and young women in the digital social environment. The dose-response relationship between usage duration and mental health outcomes provides a clear and actionable intervention target: reducing daily social media usage to below two hours, as recommended by the American Academy of Paediatrics and endorsed by Indian child health organisations, is likely to yield significant mental health benefits for Coimbatore's adolescent population.

Ultimately, the goal is not to demonise social media as inherently harmful, but to develop the individual competencies, family environments, institutional supports, regulatory frameworks, and platform design standards that enable adolescents to engage with social media in ways that enrich rather than undermine their psychological well-being and developmental flourishing. Social media, used thoughtfully and in moderation, has genuine potential to support adolescent learning, connection, creativity, and civic engagement. Realising this potential while effectively managing the well-documented mental health risks requires the sustained commitment of parents, educators, policymakers, clinicians, researchers, and technology companies to prioritise adolescent mental health in the digital age. Future research in Coimbatore may examine the effectiveness of specific school-based digital well-being interventions and explore the protective role of offline social relationships and physical activity in buffering social media's mental health impacts among adolescents.

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