

## IMPACT OF SOCIAL MEDIA USAGE ON ANXIETY AND DEPRESSION IN ADOLESCENTS

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**Dr. Aman Khandelwal**

*Assistant Teacher, Samarkand state medical university, Uzbekistan,  
Aman3238@gmail.com*

**Mahak Ansari**

*Medical Student, Samarkand state medical university, Uzbekistan,  
mahaka858@gmail.com*

**Fatima farooqi**

*Medical Student, Samarkand state medical university, Uzbekistan,  
fatimafar2366@gmail.com*

**Sidra khan**

*Medical Student, Samarkand state medical university, Uzbekistan,  
sidkhan1169@gmail.com*

### **Abstract**

The rapid proliferation of social media platforms has fundamentally transformed adolescent social interaction, with profound implications for mental health. This narrative review examines the relationship between social media usage and the development of anxiety and depression symptoms among adolescents aged 10-19. Drawing upon longitudinal studies, meta-analyses, and systematic reviews published between 2019 and 2025, this article synthesizes current evidence on the mechanisms, risk factors, and intervention strategies associated with problematic social media use. Findings indicate that while social media offers opportunities for connection and self-expression, excessive and problematic use is consistently associated with elevated symptoms of anxiety and depression. The relationship appears bidirectional, with pre-existing mental health vulnerabilities increasing susceptibility to harmful social media engagement patterns. Gender differences are pronounced, with adolescent girls demonstrating greater vulnerability to social comparison and cyberbullying-related distress. Evidence-based interventions, including cognitive-behavioral approaches, mindfulness training, and structured digital detox programs, show promising results in mitigating adverse mental health outcomes.

### **Keywords**

social media, adolescents, anxiety, depression, mental health, cyberbullying, digital intervention, screen time

## 1. Introduction

The digital landscape has undergone a seismic transformation over the past decade, with social media platforms becoming an integral component of adolescent life. As of 2025, approximately 95% of adolescents aged 13-17 in the United States report using at least one social media platform, with one-third indicating near-constant engagement. Platforms such as Instagram, TikTok, Snapchat, and YouTube have reshaped how young people communicate, form identities, and perceive themselves within broader social contexts. While these technologies offer unprecedented opportunities for connection, creative expression, and community building, mounting evidence suggests that excessive and problematic social media use may carry significant mental health costs.

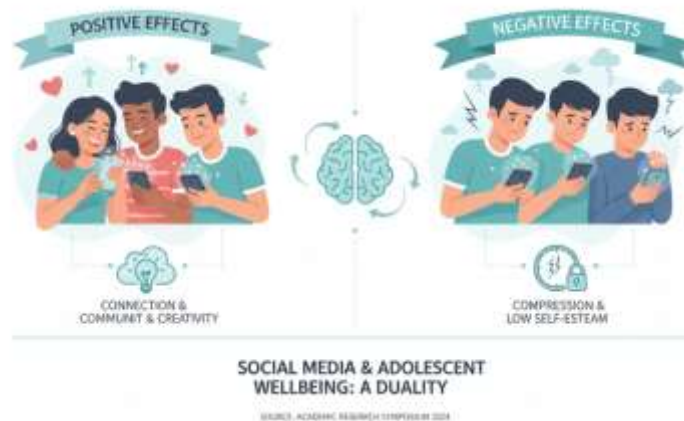
Adolescence represents a critical developmental window characterized by heightened neuroplasticity, emotional sensitivity, and identity formation. During this period, the prefrontal cortex undergoes substantial maturation while subcortical regions mediating reward processing and emotional reactivity reach peak sensitivity. This neurodevelopmental configuration renders adolescents particularly susceptible to environmental influences, including those encountered in digital spaces. The simultaneous emergence of widespread social media adoption and documented increases in adolescent mental health difficulties has prompted urgent scientific investigation into potential causal linkages.

This narrative review examines the multifaceted relationship between social media usage patterns and the development of anxiety and depression symptoms in adolescent populations. By synthesizing findings from longitudinal studies, experimental interventions, and systematic reviews, this article aims to elucidate the mechanisms through which social media engagement may influence psychological well-being, identify populations at heightened risk, and evaluate evidence-based strategies for promoting healthier digital engagement. The review addresses several key questions: (1) What is the nature and strength of associations between social media use and adolescent anxiety and depression? (2) What psychological and neurobiological mechanisms mediate these relationships? (3) How do individual differences, including gender and pre-existing vulnerabilities, moderate social media effects? and (4) What interventions demonstrate efficacy in reducing harmful outcomes?

## 2. Prevalence of Social Media Use Among Adolescents

Contemporary adolescents inhabit a media environment fundamentally different from that of previous generations. Recent survey data reveals that 97% of U.S. teens access the internet daily, with social networking representing the

predominant online activity. Adolescents spend an average of 4.8 hours daily on social media platforms, with usage patterns varying significantly by gender. Girls report approximately 5.3 hours per day compared to 4.4 hours among boys, a difference that accumulates to roughly 329 additional hours annually. By age 13, daily social media engagement increases dramatically from just 7 minutes at age 9 to over 73 minutes, reflecting the developmental salience of peer relationships during early adolescence.



*Figure 1: The dual nature of social media effects on adolescent wellbeing*

Platform preferences vary across demographic groups, with TikTok, Instagram, and Snapchat commanding particular popularity among teenage users. TikTok usage averages 1 hour 47 minutes daily globally, followed by Snapchat at 1 hour 12 minutes and Instagram at 45 minutes. The COVID-19 pandemic substantially accelerated these trends, as physical distancing measures increased reliance on digital platforms for social connection, education, and entertainment. Post-pandemic data indicates that elevated usage levels have largely persisted, suggesting permanent shifts in engagement patterns.

The age at which children first access social media has steadily declined, with 64% of 11-12 year-olds now reporting social media use despite platform age restrictions. Early initiation of social media use has been identified as a particular risk factor, as younger children possess less developed emotional regulation capacities and critical thinking skills necessary to navigate complex online social dynamics.

### **3. Mechanisms Linking Social Media to Anxiety and Depression**

#### **3.1 Social Comparison and Upward Evaluation**

Social comparison theory posits that individuals evaluate themselves relative to others, and social media platforms provide unprecedented opportunities for such comparisons. Adolescents are exposed to carefully curated, often idealized representations of peers' lives, physical appearances, and achievements. This persistent exposure to upward social comparison targets has been consistently

linked to decrements in self-esteem, body satisfaction, and overall mood. Research indicates that passive scrolling through others' content generates more pronounced negative effects than active communication, suggesting that the consumption of comparison-eliciting material represents a key risk pathway.

### **3.2 Fear of Missing Out (FOMO)**

FOMO describes the apprehension that others may be having rewarding experiences from which one is absent. Social media's architecture, with its real-time updates and notification systems, systematically activates FOMO by making visible the social activities occurring without the user's participation. Adolescents experiencing elevated FOMO demonstrate increased compulsive checking behaviors, difficulty disengaging from platforms, and heightened anxiety when separated from their devices. Longitudinal research indicates that FOMO mediates the relationship between social media use and both anxiety and depressive symptoms over time.

### **3.3 Cyberbullying and Online Harassment**

Approximately 32.7% of adolescents report experiencing cyberbullying within the past 30 days. Unlike traditional bullying, cyberbullying can occur continuously, reach vast audiences, and follow victims into previously safe spaces such as homes. The anonymity afforded by digital platforms may reduce inhibitions against aggressive behavior, while the permanence of online content prolongs victimization. Meta-analytic findings indicate that cyberbullying victimization demonstrates stronger associations with internalizing symptoms than traditional bullying, likely due to its pervasive and inescapable nature.

### **3.4 Sleep Disruption**

Adolescent sleep patterns are particularly vulnerable to social media disruption. The blue light emitted by devices suppresses melatonin production, while the engaging nature of platform content delays sleep onset. Studies demonstrate that adolescents using social media before bed experience delayed sleep onset, reduced sleep quality, and shorter sleep duration. Given that adequate sleep represents a fundamental protective factor against anxiety and depression, sleep disruption constitutes an important indirect pathway linking social media use to psychological distress.





*Figure 2: Neural pathways affected by social media engagement in adolescents*

#### 4. Research Evidence and Key Findings

The scientific literature examining social media's mental health impacts has expanded rapidly, with over 80% of reviewed articles published since 2019 reporting positive associations between social media use and depression, and approximately 78% documenting similar relationships with anxiety. A landmark longitudinal study utilizing data from the Adolescent Brain Cognitive Development (ABCD) Study followed nearly 12,000 participants across four annual assessment waves. Results demonstrated that within-person increases in social media use predicted elevated depressive symptoms from year one to year two, with effects strengthening by year three. Critically, the reverse pathway was not observed, suggesting that social media use contributes to depression rather than merely reflecting pre-existing symptomatology.

A comprehensive meta-analysis examining dose-response relationships found evidence supporting a linear association between time spent on social media and depression risk, with each additional hour of daily use conferring incremental risk. However, effect sizes remain modest, with social media use typically explaining 1-5% of variance in mental health outcomes. This has led researchers to emphasize that social media represents one factor among many influencing adolescent wellbeing, interacting with genetic predispositions, family dynamics, and offline social experiences.

| Study              | Sample Size | Duration | Key Findings                                                                                           |
|--------------------|-------------|----------|--------------------------------------------------------------------------------------------------------|
| ABCD Study (2025)  | 11,876      | 3 years  | Social media use predicted increased depressive symptoms over time; reverse pathway not observed       |
| LIFECOURSE Study   | 2,211       | 3 years  | Positive association between social media time and depressed mood, anxiety; effects stronger for girls |
| Detox Study (2025) | 373         | 3 weeks  | 1-week detox reduced anxiety by 16.1%,                                                                 |

| Study         | Sample Size | Duration        | Key Findings                                                                                                |
|---------------|-------------|-----------------|-------------------------------------------------------------------------------------------------------------|
| TikTok (2025) | Study 219   | Cross-sectional | depression by 24.8%<br>Problematic TikTok use associated with higher anxiety and depression in both genders |

*Table 1: Summary of Key Longitudinal Studies on Social Media and Adolescent Mental Health*

## 5. Gender Differences and Vulnerable Populations

### 5.1 Gender-Specific Risk Patterns

Research consistently reveals that girls experience more pronounced negative effects from social media use than boys. This gender disparity appears attributable to several factors. Girls tend to engage more extensively with platforms emphasizing appearance and social comparison, such as Instagram and TikTok. They are more likely to experience cyberbullying related to appearance and relationships, and demonstrate greater emotional investment in online social feedback as measured by reactions to received likes and comments. The Icelandic LIFECOURSE study found significant interactions between social media use and gender for depressive symptoms, with effect sizes approximately twice as large for girls.

| Variable                    | Girls             | Boys             | Significance                              |
|-----------------------------|-------------------|------------------|-------------------------------------------|
| Daily Social Media Use      | 5.3 hours         | 4.4 hours        | Girls spend 20% more time on platforms    |
| Depression Effect Size      | Beta = 0.09       | Beta = 0.04      | Stronger association for girls            |
| Anxiety Effect Size         | Beta = 0.07       | Beta = 0.03      | Girls show greater vulnerability          |
| Cyberbullying Victimization | Higher prevalence | Lower prevalence | Appearance-based bullying more common     |
| Body Image Concerns         | Elevated          | Moderate         | Social comparison effects more pronounced |

*Table 2: Gender Differences in Social Media Usage and Mental Health Outcomes*

### 5.2 Pre-existing Vulnerabilities

Individual differences substantially moderate social media's psychological impact. Adolescents with pre-existing mental health difficulties, low self-esteem, or insecure attachment styles appear more susceptible to negative outcomes. Neurobiological research suggests that adolescents with heightened amygdala reactivity to social feedback may be particularly vulnerable to the emotional ups and downs of online social engagement. Additionally, adolescents lacking strong offline social support networks may become overly dependent on digital validation, amplifying vulnerability to platform-related distress.

## 6. Interventions and Mitigation Strategies

Given the documented risks, substantial research effort has focused on developing effective interventions. These approaches generally fall into three

categories: therapy-based interventions, media literacy programs, and social media limits or restrictions.

### 6.1 Therapy-Based Approaches

Cognitive-behavioral therapy (CBT) informed interventions have demonstrated efficacy in reducing problematic social media use and associated distress. These programs typically teach adolescents to identify maladaptive thought patterns triggered by social media engagement, develop alternative coping strategies, and establish healthier usage habits. Mindfulness-based interventions, which cultivate present-moment awareness and non-judgmental acceptance, have shown particular promise in reducing both anxiety and compulsive checking behaviors. A recent randomized controlled trial found that a brief self-compassion intervention significantly reduced body dissatisfaction and depressive symptoms related to social media use, with effects persisting at three-month follow-up.

### 6.2 Digital Detox Programs

Structured reductions in social media use have demonstrated measurable mental health benefits. A 2025 cohort study of 373 young adults found that a one-week social media detox reduced anxiety symptoms by 16.1%, depression by 24.8%, and insomnia by 14.5%. Importantly, these improvements were more pronounced among participants with higher baseline symptom severity, suggesting that individuals experiencing greatest distress may benefit most from structured reductions in use. However, loneliness symptoms did not significantly improve, potentially reflecting the genuine social connection these platforms facilitate.

| Intervention Type             | Key Features                                                  | Evidence Base                                                   |
|-------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------|
| CBT-Based Programs            | Cognitive restructuring, behavioral activation, coping skills | Strong evidence; sustained effects at 3-month follow-up         |
| Mindfulness Training          | Present-moment awareness, non-judgmental acceptance           | Moderate evidence; reduces anxiety and compulsive checking      |
| Self-Compassion Interventions | Compassionate self-talk, reframing critical thoughts          | Promising; improves body image and reduces depression           |
| Digital Detox                 | Structured reduction/elimination of social media use          | Strong short-term effects; 16-25% symptom reduction in 1 week   |
| Media Literacy Programs       | Critical evaluation of media content, algorithm awareness     | Mixed results; improves knowledge but limited behavioral change |
| Family Media Plans            | Collaborative usage limits, device-free times/spaces          | Moderate evidence; effectiveness varies by adolescent age       |

*Table 3: Summary of Intervention Approaches and Effectiveness*

### 6.3 Family and School-Based Approaches

Family media plans, developed collaboratively between parents and adolescents, represent a promising harm-reduction strategy. These plans typically establish agreed-upon usage limits, device-free times and spaces, and open communication about online experiences. School-based media literacy programs aim to equip adolescents with critical evaluation skills, teaching them to recognize manipulated imagery, identify misinformation, and understand algorithmic content curation. While literacy programs show benefits for knowledge and attitudes, evidence for sustained behavioral change remains limited, suggesting that awareness alone may be insufficient to modify deeply embedded usage patterns.

## 7. Conclusion

The relationship between social media use and adolescent anxiety and depression is complex, multifaceted, and moderated by numerous individual and contextual factors. Current evidence supports several conclusions with confidence. First, excessive and problematic social media use is consistently associated with elevated symptoms of anxiety and depression, though effect sizes are modest and the relationship is likely bidirectional. Second, specific mechanisms including social comparison, FOMO, cyberbullying victimization, and sleep disruption mediate these associations. Third, gender represents a significant moderator, with girls experiencing more pronounced negative effects. Fourth, pre-existing mental health vulnerabilities amplify social media-related risks.

However, social media is not uniformly harmful. These platforms provide valuable opportunities for social connection, identity exploration, creative expression, and community building, particularly for marginalized youth who may lack supportive offline environments. The challenge lies not in eliminating social media from adolescent lives, but in promoting healthier, more intentional engagement patterns.

Evidence-based interventions offer grounds for optimism. Therapy-based approaches teaching cognitive and behavioral coping strategies demonstrate the strongest and most durable effects. Brief digital detox interventions produce meaningful short-term improvements, particularly for those experiencing significant distress. Family-based approaches that foster communication and collaborative boundary-setting show promise, though adolescent autonomy development may limit the effectiveness of externally imposed restrictions.

Moving forward, several priorities merit attention. Longitudinal research tracking cohorts through middle and late adolescence is needed to clarify developmental trajectories and identify critical periods of vulnerability. Research should move beyond screen time metrics to examine specific content, contexts, and



engagement patterns that differentially influence wellbeing. Intervention research should prioritize long-term follow-up to assess sustained impact, and investigate strategies for integrating digital wellness education into school curricula and primary care settings. Finally, policymakers, technology companies, and mental health professionals must collaborate to create digital environments that support rather than undermine adolescent development.

In conclusion, while social media represents one factor among many influencing adolescent mental health, its near-universal penetration into young people's lives demands continued attention and action. By fostering digital literacy, promoting healthy usage patterns, and ensuring that mental health support is readily accessible, society can help adolescents navigate the digital landscape in ways that maximize benefits while minimizing harm.

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