



# The Psychological Impact of Social Media on Adolescent Mental Health: A Comprehensive Review of Existing Literature and Implications for Future Research

**<sup>1</sup>-Khalid Mohammed Ali Sahli,<sup>2</sup>-Abdulrahman Ahmed M. Moafa,<sup>3</sup>-Basem Ali Hassan Harbi,<sup>4</sup>-Akram Abdulkarim Aljohani,<sup>5</sup>-Aiman Ali Ebrahim Shehab ,<sup>6</sup>- Khaled Ruzayq Almutari,<sup>7</sup>-Adel Mohammed Mosa Hamzi,<sup>8</sup>-Fahad Ali Sweidi,<sup>9</sup>-Nasser Mohsen Nasser Jaferi,<sup>10</sup>-Adel Mosaa Yahya Dogdogy,<sup>11</sup>-Ageel Mohammed Ghshoom,<sup>12</sup>-Mohammed Mohabesh Alsam**

<sup>1</sup> Ksa, Ministry Of Health, Damad General Hospital

<sup>2</sup> Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>3</sup> Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>4</sup> Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>5</sup> Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>6</sup> Ksa, Ministry Of Health, King Salman Bin Abdulaziz Medical City

<sup>7</sup> Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>8</sup> Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>9</sup> Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>10</sup>Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>11</sup>Ksa, Ministry Of Health, Amal Hospital And Mental Health

<sup>12</sup>Ksa, Ministry Of Health, Amal Hospital And Mental Health

## Abstract

**Background:** The rise of social media has transformed communication among adolescents, presenting both opportunities for connection and challenges for mental health. While social media platforms can facilitate self-expression and social interaction, excessive use has been linked to adverse psychological outcomes, including depression, anxiety, and body image issues. Understanding the psychological impact of social media on adolescent mental health is crucial for developing effective interventions.

**Methods:** This review synthesizes existing literature from scientific databases such as PubMed, PsycInfo, and Scopus, focusing on studies examining the correlation between social media usage and mental health outcomes among adolescents. A biopsychosocial framework was employed to analyze the multifaceted effects of social media engagement, considering biological, psychological, and social dimensions.

**Results:** The findings reveal a bidirectional relationship between social media use and mental health issues. Passive engagement with social media, such as browsing and commenting, is associated with increased depressive symptoms and reduced offline social support. Additionally, social comparison and the pursuit of online validation can exacerbate feelings of inadequacy and anxiety. Notably, the influence of social media varies across platforms, with distinct characteristics impacting user experiences and mental health outcomes.

**Conclusion:** The evidence underscores the necessity of recognizing problematic social media use as a distinct phenomenon affecting adolescent mental health. Interventions should focus on promoting healthy online behaviors and fostering resilience among adolescents. Future research should explore the long-term effects of social media engagement and develop targeted strategies for mitigating its negative impact on mental health.

**Keywords:** Social Media, Adolescent Mental Health, Depression, Anxiety, Body Image

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## 1. Introduction

Social media platforms are extensively utilized by various age demographics and cultures; however, for children and teenagers, online communication serves as "a window into the secret world of adolescent peer culture, even as it provides young individuals with a new medium for the expression of adolescent developmental issues" (1). Although social media provides significant opportunities for self-expression and connection with friends, many studies have also emphasized the possible adverse effects of excessive use of online social platforms. Online social interaction, the convergence of offline and virtual existence, and the notion of digital identity have emerged as significant subjects of research within psychology and mental health disciplines (2-5). Researchers in the field are striving to establish a unified definition of "problematic social media use," as it is frequently conflated with addictive behavior associated with general Internet services, which is addressed in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (6-8).

According to a biopsychosocial framework, problematic social media use entails a series of changes impacting biological functions, cognitive, psychological, and emotional mechanisms, as well as social dimensions, culminating in a diminished perceived quality of life. Input from members of the virtual social group may influence personal self-esteem and overall well-being (9-13). A problematic use may also impact several facets of a teenager's everyday existence, including academic performance, time management difficulties, procrastination, distractions, and sleep troubles (14, 15). In extreme instances, adverse results may occur and, if sustained, may have significant effects, increasing the chance of developing mental illnesses (16). The Internet and social media are young phenomena, making it more probable that excessive or problematic use may impact people during critical developmental periods, such as childhood and adolescence. A 2018 poll in the United States indicated that 45% of questioned teens claim to be almost perpetually online, with no disparities seen across genders, races, family incomes, or parental educational attainment.

Considering the persistent engagement with the virtual world, it is crucial to comprehend the influence of online social contacts on mental health and interpersonal functioning throughout developmental phases. The objective of this study, in contrast to other recent publications, is to provide a comprehensive assessment of both the impact of social media overall and the correlations between individual platforms and psychopathology. This aspect is crucial, since it is essential to differentiate among various social media sites, each possessing distinct characteristics that influence the preferences of youthful users (17, 18). Moreover, social media utilization is often included inside the wider classification of Internet use, notwithstanding the social implications that mostly characterize and delineate these types of platforms. Furthermore, the articles examined pertained to particular disorders that may arise during childhood and adolescence, encompassing not only depression and anxiety, which are the most extensively studied, but also substance-related addictive behaviors and eating disorders (EDs), as both typically begin to manifest during adolescence. Developmental phases are particularly susceptible to environmental insults due to the heightened flexibility of the central nervous system, many biological changes, and the establishment of psychological processes that influence social behaviors (19-22).

The primary objective of this study is to give facts pertaining to specific social media platforms, rather than engaging in a broader discourse about social media as a whole. We assert that the complex expression of many psychological concerns may be conveyed differently via several forms of communication, including text, video, or images. Given that social behavior and the susceptibility to psychiatric disorders are associated with the functioning of specific brain regions and biological characteristics, and considering our examination of the consequences of problematic social media usage (PSMU) from a biopsychosocial standpoint, we will also present an overview of the neuroscientific and gene-environment interactions influencing the relationship between social media and the emergence of psychiatric disorders during adolescence.

## **2. Methods**

The study used four scientific electronic databases: PubMed Central, PubMed, PsycInfo, and Scopus, to source publications on mental illnesses in adolescents associated with social media.

## **3. Symptoms of Depression and Affective Disorders**

Depression is a common mood condition characterized by enduring melancholy, diminished interest in formerly enjoyable activities, and an incapacity to do everyday tasks. In relation to infancy and adolescence, interpersonal theories of depression throughout developmental stages emphasize the cyclical relationships between social experiences and depressed symptoms. Emerging dynamics in interpersonal settings, characterized by increasingly complex, frequent, and unsupervised interactions, may provide additional challenges since peer connections may significantly impact an individual's identity and psychological health (23). Given the rise in melancholy and internalizing symptoms among adolescents over the last decade, it is essential to investigate the degree of the direct correlation between social media use and these issues, as well as to comprehend their mutual influence.

## **4. Impact of Social Media Engagement on Depressive Symptoms**

Considering that social media provide consumers various activities, it is feasible to discern distinct use behaviors. For example, activities like viewing other users' photographs or perusing comments and news feeds are categorized as passive social media engagement. Recent study reveals a bidirectional relationship between this kind of activity and depression. Passive engagement with social media may exacerbate depressive symptoms, such as anhedonia or melancholia, and hinder personal well-being (16, 24-26). Intensive social media use seems to correlate with depressed symptoms and diminished offline social support from family and friends. It may also operate indirectly via mediators such as diminished feeling of belonging, so elevating levels of loneliness initially and later leading to melancholy mood and stress, which, in turn, mutually reinforce one another (16, 27).

## **5. Impact of Depressive Symptoms on Social Media Engagement**

Depressive symptoms, loneliness, and elevated stress levels seem to augment passive social media use. Kross and colleagues have shown in longitudinal research that loneliness predicts increased social media use, perhaps serving as a means to mitigate depressive moods and promoting problematic social media use. Certain acts on social media, pertinent to the site's characteristics, were identified as linked to negative emotional and relational consequences at certain intervals and vice versa. In the case of Facebook, initial depressive symptomatology may predict a reduced quantity of Facebook friends and diminished connections among friends in the subsequent stage (28). Further research using Facebook data elucidates the correlation between internalizing symptoms and online communication, specifically with supportive comments received in reaction to postings reflecting sad or depressed emotional states, revealing that females get more support than guys. Such ruminative activity on social media may adversely impact not only the mood of the one posting but also that of the respondents, therefore elevating levels of internalizing symptoms and sadness (29). Depressive symptoms, together with sleep disturbances, may serve as a favorable predictor for excessive engagement in Facebook-related activities (30). Emotional dependency on Facebook has been adversely connected with several facets of teenagers' psychological well-being, including autonomy, life purpose, good connections, personal development, self-acceptance, and environmental management (31). A compulsive disposition towards Facebook was strongly associated with depression, irrespective of age (10–18 years) and gender (32). Longitudinal study on teenage females identified a bidirectional relationship between fluctuations in Problematic Social Media Use (PSMU) and variations in depressive symptoms, with initial depressive symptom levels serving as predictors of PSMU (33).

## **6. Social Comparison and Adverse Emotional States**

Social comparison is a mechanism integral to the formation of an individual's identity, commencing in childhood, where evaluations tend to be more positively skewed, and continuing into adolescence, when

enhanced cognitive abilities facilitate the creation of more accurate assessments (34). Social comparison may lead to either a favorable or negative self-assessment, influencing individuals, particularly adolescents, in their self-perception and overall quality of life. Literary evidence indicates that problematic social media use (PSMU) and depression symptoms may be mediated by social comparisons with others' profiles, leading to feelings of inadequacy and worthlessness. Consequently, those exhibiting downward social comparisons are more inclined to want offline feedback for validation (35). Social comparison is intricately connected to self-esteem, which, in turn, reflects the influence of individual cognitive assessment, serving as a moderator in the comparison process. Consequently, diminished self-esteem may serve as a risk factor when comparing oneself to the lives of others (36). The findings are more pronounced in girls than in boys, indicating that basic aspects of female identity formation may provide a susceptibility for negative self-assessment, particularly when assessing physical attributes or beauty. Furthermore, online parasocial contacts may exacerbate erroneous impressions owing to the filtered and selective character of shared information, particularly when assessing profiles of individuals outside one's immediate or offline network (37).

## **7. Disputed Findings Regarding the Correlation Between Depressive Symptoms and Social Media Engagement**

In the study examining the relationship between social media use and depressed symptoms, some studies found no evidence correlating social media platforms with depression. Recent research examined the correlations between motivations for Facebook use and psychological and mental health outcomes over a three-year period among late teens aged 17 to 19 years. Their findings indicated that none of the potential motivations—social connection, boredom, or information seeking—exhibited a correlation with sadness at any phase of the experimental method (38). The short-term effects of bad encounters on Facebook indicate that online peer victimization does not predict a rise in depressed symptoms after six months (39). Collectively, these findings indicate that diminished mood associated with social media use may be elucidated by several reasons, including concerns with teenagers' appearances on favored social networking sites and their propensity to compare their own image with that of others. Longitudinal research conducted by Szewedo and colleagues examined teenagers' preferences for Facebook and/or MySpace communication in connection to depressive symptoms, evaluating the sample at ages 13 (Time 1) and 20 (Time 2). Notably, elevated depressed symptoms at Time 1 forecasted a preference for social media communication, but at Time 2, increased depressive symptoms correlated with less online disclosure (23). This shift in trajectory may be elucidated by the varied manifestations of depression, particularly social withdrawal, between early adolescence and early adulthood. Concerning psychotic and non-psychotic mood disorders, social media platforms like Facebook and Twitter serve as a first resource for diagnosed adolescents to seek assistance and a possible foundation for analyzing depressed symptoms and perceived social support from online acquaintances.

## **8. Anxiety Disorders**

Anxiety symptoms often coincide with those of depression, particularly in adolescents; similar to depression, anxious expressions may arise from a combination of internal and environmental factors. Anxiety in social media, characterized by a robust relational component, may stem from inappropriate perceptions of connectivity, adverse online peer comparisons, or diminished emotional regulation capabilities, as online interactions often serve as substitutes for offline physical interactions. Specific Facebook functionalities, including soliciting online validation and support via "likes," or maintaining the visibility of posts and images that garnered substantial positive feedback on an individual's profile, can foster maladaptive behaviors (e.g., excessive social comparison and rumination) and exacerbate anxiety-related characteristics, such as socially prescribed perfectionism, thereby intensifying pre-existing symptoms in adolescents diagnosed with an anxiety disorder (40). Facebook may serve as a recreational activity for adolescents experiencing boredom; a three-year study revealed that utilizing Facebook to mitigate boredom at age 17 was associated with heightened anxiety levels at age 19, suggesting that this anxiety could be a byproduct of problematic social media usage developed over the intervening period. This may indicate that a three-year timeframe may span several phases of a teenager's development, particularly

as they approach emerging adulthood. With the conclusion of high school, diminished structured time, reduced oversight from parents and educators, and increased access to smartphones and other electronic devices may lead to a rise in problematic social media usage, consequently exacerbating underlying anxiety-related mechanisms (41). The nature and repetition of certain activities shown by Facebook users, such as publishing photos, comments, or status updates, engaging in "liking" actions, or using instant messaging, might be associated with varying degrees of overall anxiety. This may be attributed to the need of addressing concerns that compel the individual to repeatedly examine prior posting behavior (42).

Research indicated a direct correlation between Instagram use and general anxiety in guys, however in girls, this relationship was mediated by body image dissatisfaction, resulting in divergent negative effects for the two groups. This gender disparity indicates that females may be more inclined to participate in social comparison, particularly regarding physical attractiveness. Their view of an ideal body image as skinny may be influenced by excessive exposure to appealing celebrity and peer photographs on Instagram. Furthermore, it emphasizes the need of examining the potential concurrent processes that lead to the development of psychological disorders.

## **9. Digital Social Anxiety**

Social anxiety is characterized by a persistent concern for unfavorable evaluation by others in social situations or performances (43). The apprehension of obtaining negative feedback is particularly heightened throughout adolescence, a period characterized by the formation of self-identity. Engagement in social media may be particularly appealing to youth with such anxieties, since it allows for the dissemination of information or material within a more manageable context. While this enables individuals with social anxiety to somewhat mitigate their fear of public scrutiny, it may also result in the emergence of maladaptive social media use. A longitudinal study conducted by Szweo and colleagues revealed that, at 13 years of age (Time 1), social anxiety does not account for the preference for virtual communications. However, by 20 years of age (Time 2), a positive correlation emerged between social anxiety and a preference for online relationships, particularly among individuals exhibiting heightened levels of maternal behavior that undermined autonomy at Time 1 (23). The levels of social anxiety among adolescent social media users are positively connected with online behaviors, including the tendency to compare one's looks with those of others on platforms such as YouTube, Instagram, and Snapchat (44). The attitude to social media is paradoxical: individuals want recognition and approval while yet wishing to avoid harsh judgment or contempt. Awareness of these processes may exacerbate existing feelings of social anxiety, resulting in maladaptive behavioral patterns (45).

## **10. Nomophobia and Fear of Missing Out: The Need to Always Maintain Connection**

A rise in persons documenting their lives on online profiles is associated with an increased anxiety over missing updates and a greater need to oversee their pages for comments (16, 46). This phenomenon is termed "fear of missing out" (FoMO), which describes the widespread anxiety a user feels when contemplating that others may be enjoying rewarding experiences in their absence, compelling them to remain constantly connected to monitor updates about these experiences, thereby reinforcing addictive behavior patterns. FoMO has been shown to correlate with the intensity of Facebook use, possibly triggered by users as a means to momentarily alleviate or manage unpleasant emotions and anxiety (47). Particular social demands may underpin FoMO and motivations for social media engagement, such as the aspiration for popularity or the avoidance of unpopularity among peers, with the need for social attachment, particularly throughout puberty when peer relationships gain precedence over familial bonds. Online connection may serve as a perpetually accessible source of enjoyment; nevertheless, it also poses an enticing danger, potentially inciting addictive behaviors and exacerbating anxiety symptoms. This amalgamation of behavioral and cognitive processes, within the framework of social media use, seems to be influenced by nomophobia, defined as the anxiety of being unable to access a mobile phone. Literature indicates a clear correlation between anxiety levels, addicted behavior towards social media, and nomophobia, adversely affecting academic performance (48,49).

## **11. Eating disorders, body dissatisfaction, and nutrition**

Adolescence is a period characterized by physical transformations and identity formation, during which teens gain an enhanced awareness of their own bodies and those of their friends (49). Sharing images on social media is a prevalent activity among youth, particularly self-portraits, usually referred to as "selfies" (50). Extensive exposure to images of the body may result in adverse effects, including body image dissatisfaction, characterized as "the discrepancy between identification of one's own figure (actual) and the figure chosen as the desirable self-image", or changes in dietary habits, potentially culminating in the emergence of eating disorders (EDs) (51). Concerning Instagram, body image dissatisfaction mediates the association between problematic social media use (PSMU) and internalizing symptoms variably in men and females, with females exhibiting a more pronounced indirect impact (52).

Research involving Singaporean females indicated that the behavior of browsing and editing selfies on Instagram, as well as body esteem, is mediated by unfavorable appearance comparisons within peer groups, but submitting self-photos is directly connected with body esteem (49). Tiggemann and colleagues examined the relationship between Facebook use and body image issues in females, finding a significant correlation between time spent on the site and body surveillance, as well as the pursuit of an ideal skinny body shape (26). An examination of a Canadian cohort of adolescents reveals that increased and extended engagement with social media platforms correlates with body dissatisfaction, leading to a tendency to regard oneself as overweight across both genders. Recent research by Fardouly and associates reveals that increased frequency of appearance comparisons on social media, particularly when perceiving others as more attractive, is negatively correlated with body image satisfaction and positively associated with eating disorders among both male and female adolescents (53). Data from a sample of Italian teenagers underscores the influence of appearance control beliefs and body image control in photographs, as these factors may serve as predictors of problematic social media use and adverse mental health consequences (54). The results suggest that females have a greater susceptibility to forming a negative body image. This danger may be exacerbated by deceptive and detrimental material prevalent on social media.

## **12. Employment of Social Media and Neural Mechanisms**

Neuroscientific evidence indicates a connection between online social activities and the control of brain systems. Functional magnetic resonance imaging (fMRI) research by Meshi et al. indicates that social media participation correlates with activity in the ventral striatum (vSTR) and adjacent regions of the nucleus accumbens (55). The scientists established a correlation between the activation levels of these regions and the subjects' responses to social input pertinent to their social reputation, analogous to "likes" on Facebook. Further research indicates increased activation of the vSTR in response to more popular shared images compared to those with lower social endorsement (56). Structural data indicates that the striatal area is associated with daily smartphone checking and extensive social media activity (57,58). Recent data indicates the participation of the right lateral orbitofrontal cortex, associating a reduced volume in that region with excessive social media use (59). Concerning impulse control, diminished gray matter volume in the anterior cingulate cortex was observed in individuals predisposed to addictive behaviors towards instant messaging services and "multitasking" users, indicating that social media engagement significantly influences inhibitory control mechanisms.

Relevant research by Moaisala et al. on media multitasking revealed increased activity in the right prefrontal cortex during a cognitive task, which the authors ascribed to mental effort in resource allocation for executive control (60). Regarding social cognition in adolescence, fMRI studies demonstrate that online peer rejection activates the medial prefrontal cortex, closely linked to offline rejection, and elicits neural responses in the dorsal anterior cingulate cortex, subgenual anterior cingulate cortex, and anterior insula, areas commonly associated with "social pain" and depression. The immediate and enduring effects of substantial and prolonged social media use on brain structure and functioning need elucidation.

### 13. Conclusions

In just a decade, social media has significantly changed individuals' lives and social behavior. Emerging technologies and platforms offer a wide range of activities, leisure, and interaction with friends, family, or strangers. However, different patterns of usage are moderated by individual features such as genetic, environment, temperament, and personal needs. Social media platforms have become an integrated part of people's daily lives, leading to the need for research in human behavior fields to understand how these platforms are modifying brain mechanisms, interactions, and well-being.

During developmental stages, such as adolescence and early adulthood, changes occur in neural functions and social patterns. The most popular platforms require users to be at least 13 years old to own a profile and access services. However, it is difficult to have a clear overview of the sociodemographic information of young users and the different patterns of usage or effects of social media in early adolescence (10-14), middle adolescence (15-17), and young adulthood (18-21).

Social media provides unprecedented opportunities to trace online activity and keep track of interaction dynamics at different stages. The increasing utilization of hashtags might help in detecting and monitoring targeted topics or risky behaviors, despite the risk of inappropriate use of words. Research on problematic behaviors or effects according to platforms is crucial, as social media sites constantly evolve, and researchers struggle to keep up with new online functionalities and interactions among users. The mental health community should commit to considering social media-related issues as separate from other forms of problematic online behaviors or usage. New evidence in these fields would support practitioners in twofold: providing information shared on social media sites and patterns of usage of new technologies could be implemented in clinical work for a more complete assessment and profiling more user-based interventions merging both online and offline strategies.

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**التأثير النفسي لوسائل التواصل الاجتماعي على الصحة النفسية للمراهقين: مراجعة شاملة للأدبيات الحالية وآفاق البحث المستقبلي**

#### الملخص

**الخلفية:** أحدثت وسائل التواصل الاجتماعي تحولاً جذرياً في طرق التواصل بين المراهقين، مما أتاح فرصاً للتفاعل الاجتماعي والتعبير عن الذات، لكنه في الوقت ذاته أثار تحديات تتعلق بالصحة النفسية. رغم أن هذه المنصات يمكن أن تعزز التفاعل الاجتماعي، فإن الاستخدام المفرط لها يرتبط بنتائج نفسية سلبية، مثل الاكتئاب والقلق ومشكلات صورة الجسد. يعد فهم التأثير النفسي لوسائل التواصل الاجتماعي على الصحة النفسية للمراهقين أمراً ضرورياً لتطوير تدخلات فعالة.

**الطرق:** استعرضت هذه المراجعة الأدبيات الحالية من قواعد بيانات علمية مثل PubMed و Scopus و PsycInfo، مع التركيز على الدراسات التي فحصت العلاقة بين استخدام وسائل التواصل الاجتماعي ونتائج الصحة النفسية بين المراهقين. تم استخدام إطار عمل بيولوجي نفسي اجتماعي لتحليل التأثيرات متعددة الأبعاد لاستخدام وسائل التواصل الاجتماعي، مع مراعاة الأبعاد البيولوجية والنفسية والاجتماعية.

**النتائج:** كشفت النتائج عن علاقة ثنائية الاتجاه بين استخدام وسائل التواصل الاجتماعي ومشكلات الصحة النفسية. يرتبط التفاعل السلبي مع وسائل التواصل الاجتماعي، مثل التصفح والتعليق، بزيادة أعراض الاكتئاب وتقليل الدعم الاجتماعي خارج الإنترنت. كما أن المقارنة الاجتماعية والسعي للحصول على التقدير عبر الإنترنت يمكن أن يزيدا من مشاعر النقص والقلق. ومن المثير للاهتمام، أن تأثير وسائل التواصل الاجتماعي يختلف عبر المنصات، حيث تؤثر الخصائص المميزة لكل منصة على تجارب المستخدمين ونتائج الصحة النفسية.

**الخلاصة:** تؤكد الأدلة على ضرورة التعرف على الاستخدام المفرط لوسائل التواصل الاجتماعي كظاهرة منفصلة تؤثر على الصحة النفسية للمراهقين. يجب أن تركز التدخلات على تعزيز السلوكيات الصحية عبر الإنترنت وتعزيز المرونة لدى المراهقين. ينبغي على الأبحاث المستقبلية استكشاف التأثيرات طويلة الأجل لاستخدام وسائل التواصل الاجتماعي وتطوير استراتيجيات مستهدفة لتقليل تأثيراتها السلبية على الصحة النفسية.

**الكلمات المفتاحية:** وسائل التواصل الاجتماعي، الصحة النفسية للمراهقين، الاكتئاب، القلق، صورة الجسد