

The Impact of Social Media on Adolescents' Mental Health

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Abstract. This study examines the complex effects of social media on the mental health of adolescents in the digital age. Teenagers between the ages of 12 and 19 now live their lives heavily influenced by social media, which shapes their social interactions, identity formation, and mental health. Frequent use carries serious hazards, such as anxiety, depression, and cyberbullying, even though it offers chances for social interaction and assistance, especially for under-represented groups. According to empirical data, social comparison and body-image issues are exacerbated by algorithm-driven platforms like Instagram and TikTok, with adolescents who are insecurely attached being particularly susceptible to unfavourable comments. Unrealistic self-evaluations are fostered by excessive exposure to idealised content, which can lead to mental pain and, in severe cases, suicidal thoughts or self-harm. Psychological vulnerabilities are made worse by physical health problems, such as sleep disturbances brought on by extended screen time. The relationship between social media and teenage mental health is complicated overall, influenced by usage patterns, platform features, and individual differences, even when favourable outcomes—like peer support and decreased loneliness—are obvious. Generalisability is limited by methodological flaws in current research, such as the use of self-reported cross-sectional data and small, culturally limited groups. Nevertheless, findings highlight the urgent need for evidence-based interventions by parents, schools, and policymakers to mitigate risks and promote adolescents' healthy development.

Keywords: Social media, Adolescents, Mental health.

1. Introduction

The 21st century is a deep integration of digitalization and globalization era. Social media is no longer limited to adults' professional use but has become deeply embedded in the daily lives of teenagers who are already entered society or are still preparing to do so. The popularity of mobile phones and the rapid development of the Internet have made this generation of teenagers almost constantly influenced by social media. Many young people now prefer to use the internet to access the latest information and engage in social interactions rather than communicate face-to-face in real life. As a result, social media occupies a large portion of their daily lives. This has directly changed the socialization model of teenagers, enabling them to establish, maintain, and even expand social relationships in virtual spaces, while simultaneously shaping and reconstructing their self-identity. Adolescence is an important stage for individual cognitive development, psychological development

and socialization. During this time, teenagers build their understanding of society through personality and experience which makes them more vulnerable to external stimuli. That is the reason why they are more likely to experience impulsiveness, and they are exposed to the high-frequency emotional stimuli in social media which makes them more vulnerable that has a certain probability of leading to negative emotions. Long-term negative stimuli can significantly affect teenagers' mental health. In today's social media environment, the information spreads rapidly, and the immediate feedback, result as the proliferation of idealized content exert a measurable influence on the adolescents' perceptions of society and intensify pressures which related to self-evaluation. These dynamics are largely unavoidable in the context of social media utile, and the algorithmic recommendation systems employed by many platforms further magnify such effects. However, adolescents are frequently prompted to engage in upward social comparisons with peers who are perceived as more attractive, accomplished, or socially prominent. This persistent and non-randomized pattern of comparison elevates the probability of anxiety and diminished self-esteem. Consequently, the implications of social media use for adolescent mental health have emerged as a critical focus within public health, educational research, and social policy discourse. Although the risks are increasingly acknowledged, it is also important to note that social media provides adolescents with expanded opportunities for social engagement and emotional support. For individuals with limited access to offline communication or for members of marginalized groups, online interaction can mitigate feelings of isolation and serve as a source of psychological reassurance. There are some studies have shown that participation in online peer communities fostered reassurance, conveyed acceptance, and facilitated the exchange of practical approaches to addressing mental health concerns [1]. However, social interaction also brings significant risks. Among them, cyberbullying is one of the serious situations and it can have a negative impact on an individual's mental health. Compared with adolescents who had not faced cyberbullying, those who had were more likely to report symptoms of depression and engage in self-harm [2]. Cyberbullying is one of the significant risk factors that lead to self-harm and suicide, as many lack the psychological resilience to withstand sustained negative commentary and the pressures of public exposure. Therefore, the use of social media has a significant impact on the mental health of teenagers. Conducting an in-depth analysis of the relationship between social media use and adolescent psychological well-being is essential for the development of targeted intervention strategies, as well as for providing evidence-based guidance to parents, schools, and social media platforms. From a theoretical perspective, such research contributes to the knowledge system in adolescent development psychology, media psychology, and public health fields.

2. Key concept

In this study, "teenagers" mainly refer to individuals aged between 12 and 19, a developmental period widely recognized as critical for cognitive, emotional, and social growth. During this period, the psychological characteristics of individuals tend to instability, and their perception of their own identity and social roles are highly responsive to environmental contexts and lived experiences. Social media occupies a relatively important position in the daily lives of this group, and due to the popularity of smart phones and the Internet, the usage time of social media in the daily lives of teenagers has gradually increased. Social media refers to platforms and applications based on internet technology that allow users to create, share and exchange content, and establish social relationships through interaction [1]. Among adolescents, applications such as Instagram and WhatsApp are particularly popular among teenagers. The defining features of social media include user-generated content, real-time interaction, and accessibility across multiple platforms. Social

media is not merely an information exchange tool, and it is an important tool of identity construction and social interaction. Through algorithmic recommendation systems and instant feedback mechanisms, social media can rapidly intensify both positive and negative social comparisons, thereby amplifying emotional responses and exerting a significant influence on adolescent mental health. Anxiety commonly accompanied by physiological and cognitive symptoms such as elevated heart rate, rapid breathing, and concentration difficulties which is an emotional state with worry, tension, and unease [3]. Competition with peers or family expectations usually lead to anxiety. Depression is a psychological disorder which primarily characterized by a persistent low mood and a diminished sense of interest or pleasure. It is frequently accompanied by additional symptoms such as reduced energy, impaired concentration, decreased self-esteem, and disturbances in sleep and appetite [4]. Adolescent depression is influenced by genetic, physiological factors, broader social and environmental conditions. Exposure to negative information on social media, as well as experiences of cyberbullying, can contribute to the development of depressive tendencies by fostering persistent low mood and undermining self-esteem.

3. Correlation between social media use and adolescent mental health

Many studies have demonstrated a significant correlation between social media use and adolescent mental health. Nevertheless, the existing literature presents several notable limitations. Since the samples of most studies are concentrated in a single cultural background or specific groups, it is difficult to make cross-cultural and cross-gender comparisons. Most studies use cross-sectional designs. Because there are limited longitudinal follow-up, it restricts the capacity to establish causal relationships or assess the long-term effects of social media use. Moreover, lots of measurement methods use questionnaires or interviews which means participants are susceptible to social desirability bias and recall bias. Additionally, relatively few studies have incorporated multi-platform data analyses, which would better capture the complexity of adolescents' online behaviors. These weaknesses reduce both the internal and external validity of the findings. They also limit how useful the research is for creating effective intervention strategies. This problem is especially important in today's digital era. To address the issues, this study integrates the following elements: Tong's study, Hawley et al.'s study, Anto et al.'s study, and six empirical studies, systematically examines the multifaceted impact of social media on the mental health of adolescents [5-7]. It conducts differentiated analyses of various influencing factors and synthesizes multiple findings on their effects. The study provides a comprehensive and structured overview of the topic. It offers valuable references for relevant social institutions.

The influence of social media on adolescents is multifaceted which due to the interaction of psychological vulnerabilities, peer competition, platform characteristics, social context, and physical health, rather than a single cause. Social media provides a platform to meet different people for teenagers. When they communicate with others, their perception of their own identity becomes more complex. Teenagers are becoming increasingly sensitive to their peers' evaluations and social status. These weaknesses are also exacerbated by social media, particularly in the case of teens whose attachment style is insecure. According to the study by Hawley et al. , adolescents exhibiting anxious or avoidant attachment tendencies might depend more heavily on social media to seek affirmation and social bonds. This kind of dependence can have adverse effects, because their sense of self-worth may become tied to the responses they obtain online [6]. Adolescents who have anxious or avoidant attachment styles are more hope to obtain on online feedback for recognition because of lacking a sense of security. Compared with face-to-face interactions, social media offers more immediate responses, which these individuals strongly desire to be positive. Consequently,

teenagers' emotional resilience becomes extremely susceptible to their online social feedback and make them easily worried. While positive experiences and escapism on social media can temporarily alleviate anxiety, this reliance reinforces emotional vulnerability. Some students said social media helped them relax emotionally and made them feel more connected and accepted [7]. An increasing number of adolescents struggle to find a sense of belonging in real life and often feel isolated or marginalized. For those who have difficulty communicating offline, online communities provide greater opportunities for self-expression and support. However, such feedback is not always positive. Negative responses can intensify adolescents' negative emotions, particularly among those already feeling excluded, leading to heightened resistance and self-doubt in offline interactions. As adolescents deepen their engagement with online communities, this developmental sensitivity is further amplified by the close interplay between the nervous system and social interaction. As external stimulation increases, the limbic system, which regulates emotions, develops more rapidly than the prefrontal cortex, which governs decision-making and impulse control. This neurobiological imbalance may contribute to risky online behaviors, such as excessive self-disclosure and heightened social comparison. For adolescent girls, continuous viewing of idealized social media content, including images and lifestyles on Instagram, can aggravate depressive and anxious symptoms [5]. Online platforms expose adolescents to peers with idealized appearances and family backgrounds, creating frequent and often unconscious sources of comparison. Teenagers have more unconscious concerns about their self-image and contribute to shifts in psychological well-being. Social media algorithms frequently connect peers of similar age but diverse backgrounds, which is why adolescents are especially prone to engage in comparisons and competition related to appearance, abilities, and other attributes. The effects of social comparison on envy and self-esteem are intensified when adolescents face high peer competition alongside significant parental pressure [8]. This means such competition is more likely to evoke negative emotions such as anxiety and feelings of inferiority, particularly under parental pressure. When adolescents compare themselves with peers, they often perceive others as superior in areas such as academic achievement, which fosters jealousy and low self-worth. These perceptions distort their judgment of reality—for instance, assuming peers enjoy greater economic privilege based solely on selective online portrayals. This understanding of biased extends beyond appearance to encompass achievements, friendships, and lifestyles. Therefore, when teenagers are filled with such selected and exaggerated information in their lives, they may develop feelings of inferiority or feel marginalized. At a stage when their worldview remains unstable, adolescents may struggle to manage jealousy and insecurity, which in turn heightens the risk of extreme outcomes, including self-harm, suicidal ideation, or even participation in socially harmful activities. These social media posts, especially the highlights of others' lives that have been highly selected, make them develop a biased understanding of reality and lead to excessive competition and pressure. For those uncertain about their identity or sense of belonging, this process can result in profound emotional pain.

Because content varies across platforms, their effects on adolescents are platform-specific and not uniform. The study by Anto et al shows that anxiety symptoms increased notably among individuals who frequently followed Instagram content focused on physical appearance [7]. Instagram often intensifies adolescents' pursuit of thinness, contributing to heightened anxiety about body image. Similarly, short-video platforms like TikTok, driven by rapid and highly personalized algorithmic recommendations, can amplify emotional responses by repeatedly presenting sensational content. This content frequently involves sensitive or trending topics and is strategically tailored to user preferences or purchasing tendencies, thereby increasing platform engagement and online sales. Unlike social media that focuses on chat and group discussions, these two platforms emphasize

aesthetic appeal, dissemination speed, and algorithmic engagement. These features encourage conformity to popular opinions, reduce creative expression, and promote homogenized aesthetics, as adolescents increasingly reproduce trending content at the expense of creativity and independent thinking. Such short videos with wide discussion and visual appeal are particularly likely to trigger emotional fluctuations in teenagers. Therefore, if factors such as long-term high emotional investment and fixed interaction types are combined, it can lead to a sense of loss in teenagers after they stop using social media. These emotions may induce sleep disorders, anxiety symptoms, and further damage teenagers' mental health. Passive engagement, such as scrolling through content, was linked to greater negative affect than active forms of participation, including direct messaging [1]. This means that social media platforms mainly featuring short videos are more likely to cause negative emotions among teenagers. Under the influence of such negative emotions, they may experience adverse effects on their daily lives, such as reduced sleep, lack of confidence in their abilities and features, and decreased offline social activities. It is not the case that all high-frequency use of social media leads to depression among teenagers, but rather that passive scrolling through social apps may be more likely to cause depression in teenagers.

Cyberbullying constitutes significant threats to adolescents' mental health. Social media exposes adolescents to both positive and negative feedback within a short timeframe, heightening anxiety in their pursuit of validation. On these social networks, anonymity and a lack of responsibility lead to harassment and threat as it is easier for people to behave aggressively online rather than offline due to the stronger invisibility. Moreover, the public visibility and rapid dissemination of social media content intensify the severity of these experiences. Consequently, the psychological harm caused by cyberattacks is both pervasive and profound, leaving victims feeling helpless while harmful content spreads rapidly and remains permanently accessible. Cyberbullying showed a strong association with elevated suicidal thoughts, particularly in female adolescents [2]. Objectifying eyesight or appearances as discrimination occurs online for adolescent girls posting photo images of themselves. Unlike their less attractive counterparts, pretty girls feel shame or powerlessness after same-gender girls' jealous attacks or the opposite-gender's objectification, and those who are not pretty may feel shaming and worried after appearing to others' appearance-degrading remarks. The content is often downloaded and circulated by others, prolonging victims' exposure to online bullying. Social media further reinforces conformity to mainstream views, and some adolescents, in pursuit of group recognition, may participate in online harassment to gain social acceptance and validation through others' approval. This dynamic contributes to the escalation of bullying from isolated incidents to large-scale phenomena. Consequently, online bullying substantially increases victims' susceptibility to depression and anxiety.

Physical health problems resulting from excessive social media use also play a significant role in adolescent mental health. Research indicates that prolonged screen exposure before bedtime disrupts melatonin secretion and circadian rhythms, leading to poor sleep quality. In turn, insufficient or poor-quality sleep has been identified as a contributing factor to depression among adolescents. Using smartphones before bedtime can disrupt melatonin levels and the body's natural sleep cycle [9]. Because adolescent brains are still developing, sleep is very important in supporting healthy maturation. Insufficient sleep has been linked to an increased risk of depression, and the other hand reduced sleep duration and quality disrupt daily routines, impair concentration, and heighten irritability. These challenges can lead to a cycle in which poor rest both negatively affects schoolwork and contributes further to low test scores and fractured social connections, amplifying stress further. Disappointment from parents or peers can further exacerbate these pressures. The addictive nature of social media compounds this cycle, as dopamine-driven feedback mechanisms—

such as likes, notifications, and sharing—foster compulsive usage. These mechanisms interfere with the brain's reward system. They reinforce dependence and make it more difficult for adolescents to disengage. Dopamine-mediated feedback mechanisms on platforms such as TikTok promote compulsive engagement and foster emotional reliance [5]. The frequent and immediate feedback mechanisms of social media trigger dopamine release, increasing adolescents' susceptibility to dependence and reinforcing their desire for subsequent positive feedback. This neurochemical stimulation helps explain why many adolescents, despite recognizing potential harm, struggle to disengage. Anticipation of positive reinforcement and the addictive nature of these mechanisms diminish concern for the negative consequences associated with social media use.

4. Discussion

This article primarily synthesizes and draws conclusions from previous research. Across the six studies reviewed, the primary samples consisted of adolescents between the ages of 12 and 19. For example, Tong examined middle school and high school students belonging to the "digital natives" generation [5]. Some studies have expanded the sample scope to include college students, like Anto et al. recruited total of 21.5-year-old undergraduate students from six universities in the United Kingdom [7]. Although still in the youth stage, this group demonstrated a higher dependence on smartphones and social media. This design allowed the study to examine whether frequent social media use, under the dual pressures of academic demands and social integration, was associated with differences in mental health. The sample sizes across the studies generally ranged from approximately 100 to 200 participants. For example, Charoensukmongkol comprised 250 adolescents, spanning both early and middle-to-late stages of adolescence, enabling comparisons of the psychological effects of social media across different age groups [8]. Participants represented diverse educational backgrounds and community contexts, and all were active users of multiple social media platforms. However, the majority were drawn from public high schools in the United States, with the sample predominantly consisting of White adolescents, alongside smaller proportions of African American, Hispanic, and other ethnic groups. Multiple research samples exhibited gender bias. For instance, the cross-sectional study in the Buraidah region only included female adolescents, and the survey in India also targeted girls in urban and semi-urban areas [9,10]. The study emphasized the characteristics of social media usage among female teenagers in the Middle Eastern cultural context. To enhance the external validity of the research, this paper also specifically selected a special group as the sample for the study. Naslund et al. conducted a review focusing on individuals with mental disorders, including those with depression and psychotic spectrum disorders, encompassing both adolescents and adults [1]. This provided valuable data for examining differences in social media use between clinical populations and the general population. By contrast, most studies employed general student samples and assessed their mental health levels, although some specifically included participants with pre-existing mental health risks or diagnoses. Such variations in sampling directly influence the comparability and generalizability of findings across populations.

In terms of measurement tools, most studies employed standardized mental health measurement scales, structured or semi-structured interview tools in the form of questionnaires. Regarding the measurement of depression, some studies utilized the PHQ-9 (Patient Health Questionnaire-9), which is a standardized measurement method widely recognized internationally and capable of quantitatively assessing the severity of depressive symptoms. Ali et al. evaluated adolescent depression based on clinical diagnostic criteria and symptom questionnaires. In part of anxiety measurement, Alhomaïdan, used Generalized Anxiety Disorder-7 (GAD-7) scale [9,10]. Some

studies employed self-assessment questionnaires to assess the severity of anxiety symptoms. The measurement methods for social media usage mostly adopted self-completed questionnaires, which included daily or weekly usage duration, usage frequency, types of platforms used, and purposes of usage, etc. Hawley et al. introduced the Social Media Usage Intensity Scale (SMUIS), which is used to measure social media participation, the attachment to social media, and how social media integrates into the users' daily lives [6]. Most of the research data sources are mostly from questionnaires, including offline paper-and-pencil or online platforms, interview records, and some studies combined secondary statistical data and existing literature. In terms of data analysis, each study selected different statistical methods and analysis paths based on the research design and data type. Descriptive statistics served as the foundation for all studies and were used to summarize the characteristics of the sample and the distribution of variables [9,10]. Charoensukmongkol used Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationship between the intensity of social media usage and social comparison, as well as jealousy, and also introduced moderating variables [8]. Hawley et al. employed multiple regression analysis to explore the correlations between attachment types, social media usage, and anxiety, as well as depression symptoms [6]. Ali et al. examined the relationship between the frequency of use and depression through chi-square test and logistic regression analysis [10]. Some studies combined the results of different designs and different conclusions for comparative analysis, using this method to ensure the validity and consistency of the research.

These findings have shown that adolescent's social media use is strongly connected to mental health issues such as depression and anxiety. However, this relationship is neither simple nor linear. Rather, it reflects the combined influence of multiple factors, including patterns of use and individual differences. Data analyses across various studies provide a more comprehensive perspective on this complexity. Most findings shows that a significant positive correlation between social media use and symptoms of depression and anxiety. The result of Tong et al.'s study shows that, adolescents with greater exposure to visually focused social networking platforms, including Instagram and TikTok, reported elevated appearance dissatisfaction, heightened social pressure, and increased anxiety levels [5]. Therefore, frequent use of social media can increase the frequency with which teenagers scrutinize their own appearance and may lead to an increase in anxiety levels. Hawley et al. analyzing the relationship between attachment types and the intensity of social media usage, they were found that the relationship between intensive social media engagement and anxiety or depression was amplified in adolescents with insecure attachment compared to those with secure attachment [6]. Teenagers with insecure attachment are more likely to experience depression and anxiety after using social media intensively. In the multiple regression analysis, Hawley et al. found that there was a positive correlation between the daily usage duration and the anxiety and depression scores [6]. Moreover, this relationship remained significant even after controlling for gender, age, and attachment type. Therefore, from the above study, it can be concluded that there is a significant positive correlation between the usage of social media and the anxiety and depression of teenagers. However, this correlation did not show the same statistical significance or effect strength in different studies. Among the 48 individuals reporting over five hours of daily social media use, 20 (41.67%) met the criteria for depression; however, this difference did not reach statistical significance ($p > 0.29$) [10]. This suggests that usage duration alone cannot fully predict the risk of developing depression. In contrast to studies highlighting the risks of frequent use, these findings imply that variables such as user motivation and content type may serve as moderating factors. Supporting this perspective, some studies have shown that participants who spent considerable time on social media—primarily to maintain contact with friends and family, alleviate loneliness, or access academic

resources—reported lower levels of anxiety. This indicates that the impact of social media use may depend less on overall frequency and more on the purpose, nature of engagement, and availability of alternative means of social connection. Indeed, several studies underscore the potential positive functions of social media use. Like Naslund et al. found that, Social media can function as a platform for mutual support among individuals with mental health challenges, offering both peer interaction and access to supportive resources [1]. Consequently, social media use represents an important factor influencing adolescent mental health. For some adolescents, engagement with social media facilitates recognition and social support, which can, to some extent, alleviate feelings of loneliness and reduce depressive symptoms.

At the methodological and design level, several studies suffer from limitations in sample representativeness. Many draw participants from a single region or school, restricting the generalizability of findings to broader populations. Although some research incorporates participants from different regions and genders, the results still lack universality due to the limited scope of individual samples. Furthermore, most studies employ cross-sectional designs, which preclude causal inference; as a result, they capture only the current mental health status of adolescents without providing longitudinal insights into changes over time. The heavy reliance on self-report measures introduces the risk of social desirability and recall biases, as some adolescents may infer the purpose of the survey and respond in ways aligned with perceived social expectations. This undermines both the authenticity and validity of the findings. In addition, most studies collect data from a single platform rather than multiple platforms, which restricts a comprehensive understanding of how distinct platform characteristics influence mental health. Given the substantial variation in usage patterns across platforms, disentangling their independent effects remains an important direction for future research. Although Tong's research was mentioned, it did not delve deeply into the topic [5]. Some of the studies failed to control for potential confounding variables, such as family support levels, offline social quality, and existing mental health conditions, which might affect the authenticity of the correlations. Therefore, all of these studies have many flaws that affect their research results and require repeated confirmation of their validity in future research.

5. Conclusion

This study focuses on the impact of social media on adolescent mental health. In contemporary society, marked by advanced digitalization, social media has become an integral part of adolescents' daily lives. It significantly influences their modes of social interaction and perceptions of self-identity, which in turn shape their psychological well-being. The analysis highlights that social media use is closely associated with heightened anxiety, depression, and social pressure. It is obviously of great interest for scientific research and social practice to clearly understand the effects.

Overall, after analyzing the several individual studies, the research identifies a relatively consistent correlation between social media use and adolescent mental health, with intensive use positively associated with greater symptoms of anxiety and depression. The effects are different in various platforms and are moderated by factors such as usage patterns and attachment styles. Social media also give individual some challenge on physiological consequence, emotional regulation and self-control. While contributing to risks such as cyberbullying and identity crises, it can also provide marginalized adolescents or those with limited offline communication opportunities with social support and positive emotional experiences. Therefore, social media offer dual effects. However, the above existing research has some methodological limitation, such as the small samples which lack representativeness and non-experimental designs which have limited external validity and generalizability of their findings. Nevertheless, they have important implication for parents, schools

and society at large. Social media should introduce more effective bullying policies and restrict adolescents from viewing harmful content. Therefore, schools and parents need to enhance the regulation of adolescents' sleep and physical health, such as limiting the usage of mobile phones at night. In a nutshell, this review aims to provide a systematic summary of the existing research findings, draw up conclusions and suggestions about how to promote adolescents' mental health, which will hopefully facilitate the whole-child development and the sustainable development of society.

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