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PROBLEMATIC TIKTOK USE AND ITS ASSOCIATION WITH DEPRESSION, ANXIETY AND SLEEP DISTURBANCE IN ADOLESCENTS: A SYSTEMATIC REVIEW

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ABSTRACT

Introduction: TikTok is one of the most popular social media platforms among adolescents. Application works by showing an endless stream of short, absorbing videos, which are personalized for the user by an AI-algorithm. Although its main function is to provide entertainment, it is indicated that compulsive use of the application, termed Problematic TikTok Use (PTU), is associated with adverse mental health outcomes, including depression, anxiety and sleep disturbances.

Materials and methods: A literature review was gathered using PubMed, Google Scholar, ScienceDirect and related databases, focusing on the literature specifically examining TikTok and its effects on adolescents, published between 2020 and 2025.

Key findings and conclusions: Research shows associations between Problematic TikTok Use and increased risk of depression, anxiety and sleep disorders among adolescents. Several mechanisms responsible for the negative effects of PTU are distinguished, such as social comparison, fear of missing out, doomscrolling, information overload, feedback and reward-seeking behaviors, emotional contagion and nighttime screening. Users with higher screen time show more negative effects. Longitudinal and cross-cultural studies are needed to further investigate the mechanisms and ways of prevention as the current literature is limited by cross-sectional designs, methodological heterogeneity and reliance on self-report.

KEYWORDS

TikTok, Problematic Use, Adolescents, Depression, Anxiety, Sleep Disorders, Social Media

CITATION

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Introduction

Social media has become an integral part of adolescents' lives. It does not only help them to communicate, but also serves entertainment and educational functions. Nowadays, TikTok is one of the most popular social media platforms among users in the age of 10 to 19.^[1] The application is based on short, dynamic videos and recommendation algorithms selected by AI, which personalizes the feed based on previous user's activity thus providing constant and absorbing vast amounts of content^[1]. All of this put together may result in excessive and compulsive use of the platform, described in the literature as Problematic TikTok Use (PTU)^[2]. Recent studies describe problematic social media use as a behavioral disorder involving compulsive engagement with social platforms that interferes with daily functioning and overall mental health^[3].

Scientific research indicates that PTU may be linked to a range of negative psychological consequences. In adolescents, correlations have been observed between PTU and exacerbation of depression, anxiety and sleep disorder symptoms which can result from behavioral and neurobiological factors^[4,5]. Users often experience emotional overload and having difficulties with self-regulation which leads to worsening of the mood and sleep quality^[6]. Furthermore, being exposed to content with unrealistic beauty and living standards, may increase susceptibility to depressive and anxiety symptoms through comparison^[1].

From a neuropsychological perspective, TikTok's mechanisms are likely to engage the dopaminergic reward system, which is responsible for the development of compulsive and addictive behaviors, especially involving the ventral tegmental area (VTA), as demonstrated by functional neuroimaging studies^[8]. The short cycles of visual stimuli and immediate reward as a positive experience resemble patterns known from behavioral addictions - it is confirmed in the study that "elevated levels of salience, abstinence, tolerance, craving, excessive use, desire to control consumption, and alterations in daily life habits associated with problematic TikTok use"^[7] are present. Additionally, excessive use of the application during nighttime hours is associated with disrupted circadian rhythm and reduced sleep duration, which further may impact cognitive functioning^[4,6].

Although a growing body of research points to the negative effects of PTU, there are also studies suggesting that TikTok, when used mindfully, may support mental health awareness and reduce stigma surrounding emotional disorders.^[9,10]

The aim of this paper is to conduct a systematic review of the scientific literature to assess the relationship between Problematic TikTok Use and symptoms of affective disorders and sleep problems in adolescents.

Methods

Review of medical research and articles published on PubMed, Google Scholar and related databases between 2020 and 2025.

Results

1. Overview of the TikTok platform

1.1. History

TikTok was launched in the international market in 2017, getting more popularity in 2018 after being merged with the platform Musical.ly^[1] - it quickly gained popularity among young users due to its user-friendly format and unique short-form content^[2]. Unlike former social platforms, TikTok from the start placed emphasis on short, dynamic and spontaneous forms with the use of music and visual effects. Within just a few years TikTok became one of the most frequently downloaded applications in the world, becoming the most downloaded app globally in 2020, with 850 million downloads^[12]. The app's development facilitated creative self-expression and peer connection, but also raised concerns about mental health risks in the youth population^[11,12].

1.2. TikTok algorithm

A major feature distinguishing TikTok from other social media platforms is its recommendation algorithm (For You Page), which uses advanced machine learning techniques to analyze user behavior. It tailors content based on user's activity such as likes, comments, watch time and number of video replays^[5]. As a result, each user receives a highly personalized content stream, which increases the likelihood of further interaction and prolongs the time spent in the application^[2].

Neurocognitive research suggests that this recommendation model can stimulate the brain's reward system in a way that is similar to gambling or computer games, generating a so-called dopamine-driven feedback loop^[7,8]. Combined with the short video format (15–60 seconds) and long-lasting scrolling ("infinite scroll"), this algorithm promotes compulsive use of the application, leading to the phenomenon of Problematic TikTok Use (PTU) in some users^[2, 5].

1.3. Types of content

In terms of content types, TikTok has a wide spectrum of materials, including entertainment and music content, but health-related and informative as well^[10,16]. So-called edutainment videos, which combine entertainment with education, often focusing on youth mental health and emotional well-being, are gaining increasing significance. However, studies have shown that a significant portion of popular videos on health topics contain disinformation, misusing the psychological and medical terminology or having terms used incorrectly, therefore leading users to wrong self-diagnosis or causing undermining of the real health issues^[16]. Given the fact that TikTok has a large proportion of young users who are more vulnerable to being influenced by this content, it is an important matter^[4,13,14].

1.4. User's demography

TikTok is currently the fastest growing social media platform among children and young people, exceeding Instagram, Snapchat, and YouTube in terms of usage time^[17]. An U.S. study of 10,092 early adolescents (ages 11–15) found that 67.1% reported having a TikTok account, with girls using the platform more frequently than boys^[22]. Research focusing on user-generated content, such as videos under the hashtag #teenmentalhealth, also confirmed that TikTok is mostly popular among teenagers and young adults (ages 12–17)^[10].

2. Adolescent TikTok use

2.1. Usage Motivations

Entertainment, social and expressive purposes are the main reasons for young people to use TikTok^[19]. Demographic analyses also indicate gender differences - girls typically use the app for social and expressive purposes, while boys more often focus on humorous or game-related content.^[18, 21] In a study with a survey of 500 TikTok users six prominent reasons for engaging in TikTok were identified - these are seeking information, self-expression, following trends, escaping reality, finding inspiration and passing time^[26]. Because of TikTok being so popular among adolescents, staying current with the application's trends is a way of belonging to the community and maintaining relationships^[10]. For some, TikTok functions as a source of emotional support as well^[19]. It is also a platform where individuals seek information, although the informative content is often unverified and superficial^[16].

TikTok is also an application of instant gratification as users often receive immediate feedback in the form of likes, comments and new followers. Such social recognition stimulates the dopaminergic reward system, reinforcing the urge to repeat such behavior^[29].

2.2. Usage Patterns and Intensity

TikTok use among adolescents is typically daily and intensive. Studies conducted in Spain, Greece, and China confirmed that adolescents report difficulties in limiting their usage time^[18, 4, 6]. Data from international studies indicate that the average daily time spent by adolescents on the app ranges from 60 to 95 minutes, and in some groups even exceeds 120 minutes, with a significant group of users engaging with the app right before sleep^[4, 5, 18].

A phenomenon being observed on social media apps - especially on TikTok - is doomscrolling, which is a habit of excessive and compulsive consumption of short-form videos and other social media content. Given the fact that it provides immediate gratification, users choose doomscrolling over doing the task they are supposed to take care of, which causes procrastination. As a result it leads to digital fatigue^[25].

Adolescents often experience conflicts between the enjoyment of social media use and guilt over wasted time, simultaneously finding it difficult to stop due to constantly updating content, chosen by algorithm just for them^[27, 28]. According to Lin, Z. (2023) because of TikTok's highly addictive design user's time judgment can be distorted, making it harder to stop scrolling^[26].

3. TikTok and Mental Health Outcomes

Multiple studies have reported that PTU is linked with higher levels of depression, anxiety and sleep-related problems among adolescents. In the sections below we will distinguish these three elements.

3.1. Depression

Results of empirical research consistently indicate that intensive use of TikTok may be associated with greater depressive symptoms among adolescents and young adults. A meta-analysis by Galanis et al. (2025) of 16 cross-sectional studies confirmed a statistically significant positive link between problematic TikTok use and depression^[2]. In cross-sectional study by Bilali, which included 219 participants from Greece and used the TikTok Addiction Scale (TTS), a positive correlation was found between PTU and the severity of depression symptoms, showing that 31,5% of participants indicated high levels of depressive symptoms - without significant differences between the genders, although further analysis is required to assess TikTok's dependence differences. Among predictors of depressive symptoms tested in this study according to TTS - the key variable turned out to be conflict ($\beta = 0.472$, $p\text{-value} < 0.001$) with greater influence on boys. In this context, "conflict" refers to situations where TikTok use disrupts individuals' daily activities^[4, 30]. Similar results were reported in cross-sectional study in China, where users who were more engaged with the app and were scrolling frequently did report lower mood and decreased life satisfaction^[19].

Cross-sectional analyses suggest several possible mechanisms underlying those associations. Firstly, because of the TikTok being focused on self-presentation and the pursuit of approval through "likes", it may lead to increased appearance-related pressure among adolescents which can result in lower self-esteem and self-worth^[31]. Additionally, repeated exposures to idealized or filtered images of peers can cause social comparison, negatively influencing adolescent's self-image^[32].

Secondly, excessive consumption of emotional and negative content (such as videos related to self-harm, suicide or personal emotional struggles) may contribute to depressive moods through the effect of emotional "contagion"^[1, 33]. The risk is heightened in individuals with pre-existing vulnerabilities, such as low self-esteem or prior negative reactions to social media^[31, 34].

Recent analyses of TikTok content demonstrate that adolescents use the platform to share and discuss personal emotional experiences, including symptoms of depression^[9]. Studies show that TikTok is perceived as a space for emotional expression and peer support, but also highlight that repeated exposure to sad or introspective content can intensify negative affect and contribute to emotional overload^[1,9]. Additionally, individuals demonstrating problematic TikTok use consistently report greater psychological distress, feelings of loneliness, and reduced life satisfaction^[1,19].

3.2. Anxiety

Anxiety-related symptoms represent frequently studied areas in the context of TikTok use. Studies indicate that a higher engagement with the app is positively correlated with increased general and social anxiety symptoms severity^[4,19,35]. In a study among Greek adolescents, more than a half of users with a high PTU score obtained a result indicating a moderate or high level of anxiety^[4].

The psychological mechanisms underlying TikTok's effects on anxiety may include the social pressure of self-presentation, excessive cognitive stimulation resulting from the fast pace of content, and information overload^[19]. There are factors modifying the severity of symptoms - girls and users with increased screen time show stronger association between social media use and anxiety symptoms^[35,36]. Additionally, being constantly engaged with social platforms can lead to the phenomenon called fear of missing out (FOMO), which provokes anxiety and leads to more frequent checking of the application^[4,37].

Evidence also suggests that excessive social media use may diminish real-life interactions and increase social isolation, contributing to greater levels of loneliness and anxiety^[38,39]. Early results show that heavy social media use might be linked to a lowered perception of intellectual abilities^[40]. Additionally, PTU is associated with an increased risk of experiencing cyberbullying and higher risk of other negative online exchanges, which can contribute to anxiety^[19,41].

3.3. Sleep disorders

The most consistently documented effect of intensive TikTok use is sleep disorders and reduced sleep quality. Cross-sectional studies conducted among university students indicate that insomnia mediates the relationship between PTU and depressive symptoms. This implies that disrupted sleep caused by engagement in TikTok could play a central role in linking PTU with negative mental health outcomes in young people^[20]. Among adolescents, PTU is linked to lower sleep quality, greater sleep disturbance, whereas moderate use does not show these associations^[1].

In the study by Katsiroumpa et al. (2025), Problematic TikTok use (PTTU) was significantly associated with shorter sleep duration and higher daytime sleepiness. High scores on the TikTok Addiction Scale (TTAS) correlated negatively with sleep duration ($r = -0.19$, $p < 0.001$) and positively with feelings of sleepiness during work or class ($r = 0.29$, $p < 0.001$). Younger ages were correlated with increased levels of TikTok addiction and time of TikTok use^[24]. TikTok may impair sleep through bedtime delays, increased arousal and displacement of sleep time, with evidence that bedtime use of TikTok is associated with later sleep onset and reduced sleep duration^[42-44]. However, experimental studies indicate that short-term pre-sleep social media use may not acutely disrupt sleep quality in all individuals, suggesting that chronic or compulsive use, rather than brief or moderate use, is most problematic^[45, 46].

The mechanisms of these disorders include both biological factors, such as blue light exposure and circadian rhythm disruptions, and psychological ones – including emotional arousal, FOMO, and compulsive content scrolling^[4].

It is important to emphasize that TikTok's impact on sleep differs culturally and demographically^[4]. It is also modulated by individuals' vulnerability, usage patterns and mental health status. It is also worth noting that some studies (e.g., Bilali et al., 2025) highlight possible individual differences – users with higher levels of self-regulation or those using the app primarily for educational purposes less frequently reported sleep problems. This means that the manner of TikTok use is the most crucial for showing negative effects. It was examined in another longitudinal study that limiting internet use by parents 1 hour before bedtime contributed to better sleep quality, mainly among youth who did not have a problem with problematic social media use^[29,47].

Further analysis confirmed that insomnia plays a mediating role between PTU and depression^[20]. In other words, excessive TikTok use increases insomnia, which subsequently elevates depressive symptoms. This aligns with previous evidence linking screen overuse, late-night activity, and emotional dysregulation to poorer mental health outcomes^[21]. Interventions to reduce problematic use and improve sleep hygiene are recommended, especially for at-risk youth and students^[21,44].

4. Discussion

4.1. Research limitation

The main research limitation regarding problematic TikTok use and its effects on depression, anxiety and sleep disorders among adolescents include the predominance of cross-sectional studies, which prevents the understanding of casual relationships between TikTok use and mental health outcomes^[4,19,21,48]. The primary reliance on self-report measurement tools carries the risk of subjectivity^[1,2]. An additional problem is the lack of uniform definition of “Problematic TikTok use” and differences in the scales used, making it difficult to compare results across studies

Another key limitation is a limitation of sample representativeness, with overrepresentation of certain demographics (e.g. females, university students, specific geographic regions)^[21,49]. There is also a need for further analysis of moderator and mediator factors, as well as individual vulnerability aspects.

In summary, the available research is methodologically heterogeneous, making it difficult to draw definitive conclusions. It is important to conduct long-term and cross-cultural studies in the future with the usage of standardized measurement tools to better understand the impact of TikTok on the mental health of adolescents.

4.2. Practical implications

Problematic TikTok use in adolescents is associated with increased risk of depression, anxiety and sleep disorder, therefore there is a high need for an intervention. Reducing excessive TikTok use, enhancing sleep hygiene and promoting mental health literacy should be prioritized^[48]. There is also a role that school could play, which is engaging young people with more valuable activities to decrease time spent on TikTok. Additionally, parental control has been proved as a way to avoid problems of social media addiction^[50]. Cognitive behavioral therapy (CBT) is also significantly efficient in reducing symptoms associated with problematic social media, including TikTok, use^[51]. It is as well indicated that time reduction, even just a week’s break, or total abstention from social media (including TikTok) can improve the well-being, depression, and anxiety of individuals^[24,52].

5. Conclusions

Problematic TikTok use is a growing behavioral concern among adolescents. Research shows consistent evidence that PTU is linked with heightened symptoms of depression, anxiety and sleep disturbance, with dose-dependent associations^[19]. Sleep disturbance frequently mediates the relationship between PTU and mental health outcomes, exacerbating both depression and anxiety^[20]. The AI-driven recommendation algorithm of the application contributes to potential overuse, with adolescents more vulnerable to the negative sides of the content^[1,4,19]. Individual vulnerability factors such as social comparison, feedback-seeking behaviors and negative emotional reactions also increase the risk^[34]. There is a need for future longitudinal, cross-cultural research using standardized tools, which could provide stronger evidence for incorporating preventive and therapeutic strategies, as present studies are limited by study design heterogeneity and reliance on self-measures^[1,2]. It is crucial for ensuring that TikTok can be used by adolescents without compromising their mental health.

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