

Exploring Problematic TikTok Use and Mental Health Issues: A Systematic Review of Empirical Studies

Journal of Primary Care & Community Health
Volume 16: 1–30
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DOI: 10.1177/21501319251327303
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Abstract

Background: Since its launch in 2017, TikTok has rapidly emerged as a major player in the digital landscape, amassing over a billion active users. Its engaging features have raised concerns about potential problematic use and negative mental health outcomes. Despite increasing scholarly attention, a consolidated understanding of TikTok's problematic use potential and implications remains elusive. This systematic review synthesizes empirical research on problematic TikTok use and its impact on mental health. **Methods:** This review followed PRISMA Statement 2020 guidelines and conducted a comprehensive search across PubMed, Embase, Scopus, Web of Science, and PsycINFO databases until July 10, 2024. Keywords included terms related to TikTok use, addiction, and problematic use. Studies were included based on empirical focus and publication in peer-reviewed journals. Data extraction comprised study characteristics, measures of TikTok problematic use, and related mental health outcomes. Quality assessment used JBI, Cochrane's RoB 2, MMAT, CASP, and NOS tools. The protocol was registered in OSF: <https://osf.io/cjf97>. **Results:** This review included 26 studies, involving a total of 11 462 participants. The pooled prevalence of TikTok use was estimated at 80.19%, with the highest rates observed among people aged 18 to 29 years, where it reached 85.4%. Frequent use of TikTok was closely linked with an increase in symptoms of anxiety and depression, especially in users aged under 24 years. Female users were more likely to experience problematic TikTok use, with 67.3% of such cases found among female university students. Moreover, higher addiction scores were noted among individuals from lower socioeconomic backgrounds and those who had higher levels of neuroticism. **Conclusion:** The findings of this review highlight the growing concern surrounding the impact of problematic TikTok use on mental health, particularly among younger and more vulnerable populations. It is imperative for stakeholders to prioritize the integration of digital literacy and media literacy into educational curricula. Moreover, the involvement of caregivers through guided mediation and the establishment of clear usage parameters could play a crucial role in managing screen time, particularly for younger users. To improve the current landscape of empirical research, longitudinal and interventional research is warranted.

Keywords

TikTok addiction, problematic TikTok use, social media addiction, mental health, psychiatry, digital literacy, problematic social media use, digital addiction

Dates received: 26 August 2024; revised: 18 February 2025; accepted: 25 February 2025.

Background

Launched globally in 2017 TikTok has rapidly expanded, amassing 1 billion monthly active users within its first 4 years and briefly surpassing Google as the world's most visited web domain in 2021.¹ By January 2024, the United States (US) alone boasted nearly 150 million monthly active TikTok users.^{2,3} Although TikTok is most popular among

users aged 18 to 29 years (62%), its appeal is broadening to older adults, with a 12-percentage rise, from 21% to 33% in American adults aged 18+ years using the platform.⁴ This substantial rise in userbase can be attributed to TikTok's ability to engage users through personalized content feeds that keep them returning for more. TikTok's ability to engage users sequentially appears to stem from its vast



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array of short videos (60 s or less) across various genres, coupled with a sophisticated, algorithm-driven “For You Page” (FYP) that benefits from a large user pool.^{5,6} Despite competition from similar products like YouTube Shorts and Instagram Reels,³ TikTok maintains a superior engagement rate, receiving twice as many comments per post, enhancing the likelihood of virality. Such prolific content generation fuels the algorithm’s learning process, reinforcing a positive feedback loop.⁶ Thus, a user is more likely to be presented with a video that they will enjoy watching and to engage with, thus increasing the time a user spends on TikTok. Consequently, average daily user time on TikTok has doubled from 27.4 min in 2019 to 55.8 min in 2023.⁷

This positive feedback has led to some researchers being concerned about excessive use of TikTok. A recent study of 354 college students (with 173 TikTok users), using a modified version of the Bergen Facebook addiction scale and latent profile analysis, found that 6.4% of students were at-risk for TikTok Addiction.⁵ Among this number, students found “at-risk” scored higher on measures of extraversion and loneliness.⁵ Published studies indicate a closed-loop relationship between usage and algorithm refinement, heightening the risk of addiction as user engagement increases.⁸ Qin et al⁹ highlighted the unique addictive potential of TikTok when compared to other social media platforms due to its large user base of “naïve” young adolescents, and its advanced algorithm. Using a Stimulus-Organism-response framework, they observed that TikTok’s algorithm contributed to “flow experience” and addiction behavior; those specific states of flow (enjoyment, concentration, and time distortion) mediated the effect of TikTok environment on addiction behavior and that concentration was the most important factor in TikTok addiction behavior.⁹ They concluded by stating that TikTok “has a need to contribute to society,” and that algorithm design should be changed in order to interrupt users who have been immersed in TikTok for an excessive amount of time. Furthermore, a narrative review by Montag et al¹⁰ link the immersive design features of TikTok, such as “For You Page” (FYP) and personalized video streams, to increased screen time and addictive behavior. This feature explains how the

platform meets psychological needs like self-expression and escapism, perpetuating usage.¹⁰ Additionally, TikTok’s interface, which includes an “endless scroll” and refreshing mechanism akin to a slot machine’s lever, creates a continual entertainment stream, making it difficult for users, particularly adolescents, to disengage.⁶

While several countries have banned TikTok citing national security, privacy, and content concerns, none have done so based on its problematic use properties.¹¹ Despite numerous studies on TikTok’s problematic use, a comprehensive review identifying trends to aid in clinical identification and intervention for TikTok addiction has yet to be conducted. Problematic TikTok use can be defined as pattern of behaviors where individuals spend excessive time on the platform leading to neglect of their responsibilities and continue to engage in spending time on the platform despite experiencing negative consequences. A key detail still retains control over their use. When this is compared to TikTok use disorder, a more severe condition characterized by compulsive use despite harmful consequences, often accompanied by a loss of control over usage and a strong desire to use TikTok even when intending to stop or reduce usage. The objective of this systematic review is to synthesize empirical research on problematic TikTok use and its associated mental health behaviors, focusing on understanding its prevalence, potential risk factors, usage patterns and trends, and key findings.

Methods

Search Strategy

This review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement 2020 guidelines.¹² We conducted a comprehensive and systematic search across multiple databases to capture all relevant empirical studies on TikTok addiction and problematic use up to July 10, 2024. The databases searched included PubMed, Embase, Scopus, Web of Science, and PsycINFO.

The Boolean search parameters were initially formulated using keywords such as “TikTok,” “TikTok addiction,”

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“problematic TikTok use,” “social media addiction,” “short video addiction,” “TikTok use disorder,” “mental health,” “psychological traits,” “usage patterns,” “demographic factors,” and “technology use,” combined with Boolean operators (AND, OR) to maximize retrieval of relevant studies. Throughout the search process, the parameters were revised iteratively to ensure completeness and precision of the results.

During an initial scoping search, we found that the results were either too broad or missed some relevant studies. Based on these findings, adjustments were made to refine the search. For example, additional keywords such as “compulsive use” and “behavioral addiction” were added to capture more nuanced aspects of TikTok usage patterns. Similarly, combinations of Boolean operators were modified to narrow the focus on TikTok-specific studies while excluding irrelevant general social media studies.

The final search parameters were determined after several iterations, in consultation with all reviewers, to ensure that the balance between sensitivity (obtaining all relevant studies) and specificity (excluding irrelevant content) was optimized. This iterative approach allowed us to include all pertinent literature while minimizing irrelevant search results, ensuring a comprehensive and focused review.

No language restrictions were applied, and the search included studies from the inception of each database up to the cutoff date. Manual searches of reference lists from relevant articles were also performed to identify additional studies not obtained in the database searches. This review was conducted according to PRISMA guidelines, and all data analyzed are derived from peer-reviewed articles included in the literature search. No original research or observational data was collected by the authors.

Study Selection

The study selection process involved several stages to ensure the inclusion of appropriate studies. Initially, all identified records were imported into EndNote X9 (Clarivate Analytics) to manage citations and remove duplicates. Following deduplication, 2 reviewers independently screened the titles and abstracts of the remaining studies to assess their eligibility based on predefined inclusion and exclusion criteria.

Inclusion criteria

- Empirical studies focusing explicitly on TikTok addiction or problematic use.
- Studies published in peer-reviewed journals.
- Studies, including cross-sectional, longitudinal, qualitative, and mixed-methods designs.
- Studies with clear objectives, methodologies, and outcomes related to TikTok use.

Exclusion criteria

- Non-empirical studies such as literature reviews, commentaries, editorials, and theoretical papers.
- Studies that focused on social media use in general without specific emphasis on TikTok or that only focus on content analytical approaches.
- Grey literature, conference abstracts, and non-peer-reviewed articles.

Full-text articles were retrieved for studies that met the inclusion criteria based on title and abstract screening. The full texts were then reviewed independently by 2 reviewers to confirm their eligibility. Disagreements between reviewers regarding study inclusion were resolved through discussion, and if necessary, a third reviewer was consulted to reach a consensus. Two reviewers (L.J. and L.V.) were involved in sifting through the articles gathered, based on the inclusion and exclusion criteria. Both reviewers independently screened titles and abstracts to assess study eligibility, and reviewed full texts for confirmation. Differences in opinion were addressed through discussion, and unresolved disagreements were resolved by involving a third reviewer (S.A.). The PRISMA flowchart is depicted in Figure 1.

Data Extraction.

The 2 reviewers worked on the data extraction for our study using a pre-designed standardized form. This form was developed with the aim of collecting all necessary information in an organized way. The sections that were considered essential included; author(s) name(s) and publication year, title of the study, primary focus/domain of research, geographical location where the study took place among others. Additionally, demographic details of respondents were also captured under the sample description section to ensure that wide range representative characteristics such as age-groups and gender were retained.

Moreover, it indicated main objectives for each study; described research design type that is, cross-sectional versus longitudinal versus mixed-methods; noted any interventions if they formed part of investigation under consideration; highlighted potential risk factors related with problematic use of TikTok. These sections enlisted prevalence rates within the population that were being studied along with patterns or trends surrounding TikTok usage among participants. Specific statistical measures used during the analysis stage are listed down below to describe the methodological process employed by these studies. Our review focused on summarizing key findings that aid in appreciating diverse outcomes that could be attributable to TikTok’s impact on psychological, social, and behavioral aspects.

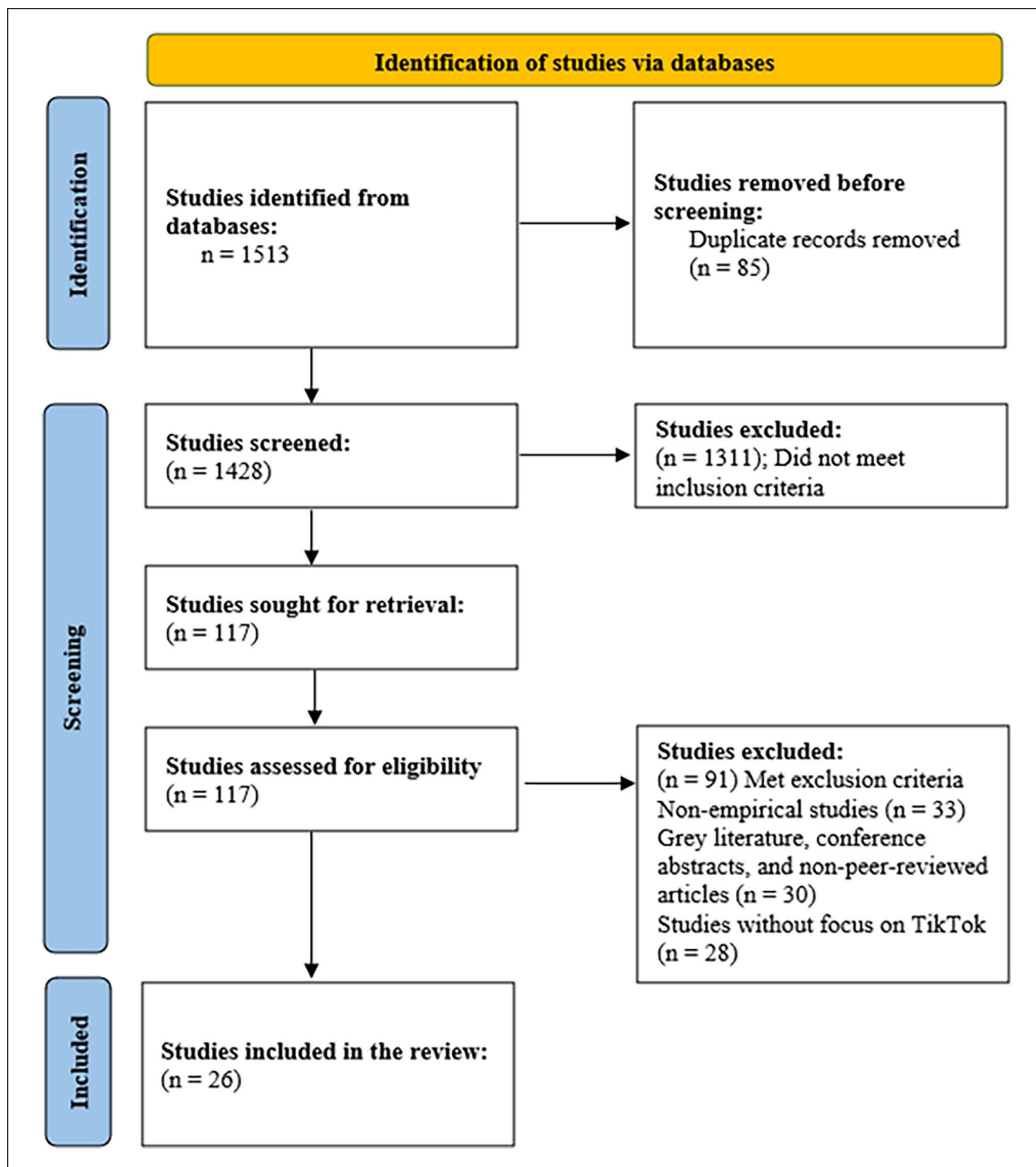


Figure 1. PRISMA flowchart depicting the study selection process.

Quality Assessment

To verify validity and reliability of studies incorporated into our review, 5 different quality assessment tools were utilized. JBI checklist was used for cross sectional studies,

CASP qualitative checklist was used for verifying quality standards were being properly met for qualitative projects employed in this project.¹³ The Mixed Methods Appraisal Tool (MMAT) tool was used to evaluate both quantitative and qualitative methods to ensure no bias would be

implemented toward either side which would mean proper mixed method design.¹⁴ We also used Cochrane's integrated risk of bias (RoB 2) tool for randomized controlled trials assessment. This instrument was used to help with identifying potential biases; deviations from planned interventions and missing outcome data.¹⁵ NOS scale was used to help us assess aspects of longitudinal studies, specifically with longitudinal observational studies: identification of study groups, comparative effectiveness groups, determination of exposure, or outcome of interest.¹⁶

The quality assessment involved systematically scoring each study according to the specific criteria outlined by the respective quality assessment tool. The criteria included aspects such as study design, methodology, potential biases, and reliability of outcomes. The results of the quality assessments were discussed among the team to ensure consistency and transparency, thus maintaining a robust and reliable selection of evidence for the review. The quality assessment process was conducted independently by 2 reviewers (L.J. and L.V.), who evaluated each study using the appropriate assessment tool. The decision-making process regarding the criteria for full-text inclusion, quality assessment, and data extraction was determined collectively by the review team at the onset of the study, ensuring consistency throughout the review. Any disagreements between the 2 reviewers were resolved through discussion. If consensus could not be reached, a third reviewer (S.A.) was consulted to make the final decision.

Data Synthesis

Narrative synthesis approach was adopted. This involved bringing together studies based on measurable outcomes such as prevalence of use, demographics, and mental health factors, which were then discussed thematically. The thematic analysis approach helped in identifying risk factors with problematic TikTok use; these are: demographics, usage patterns, and mental health contributors. Quantitative data was summarized using descriptive statistics to describe patterns of TikTok use, including prevalence rates and demographic characteristics of participants. All analyses were conducted using IBM SPSS Statistics version 28. Studies were systematically compared to draw broader conclusions about TikTok patterns and impacts. Key findings from each study were tabulated then grouped by related themes to give an overall overview of the evidence linking TikTok use with its impact on mental health.

Ethical Considerations, Protocol Registration, and Funding

As this study involved the analysis of secondary data from published studies, ethical approval was not required.

However, the review was conducted in accordance with ethical considerations for systematic reviews, ensuring the integrity and accuracy of data extraction, analysis, and reporting.¹⁷ In addition, the protocol was registered with the Open Science Framework (OSF): <https://osf.io/cjf97>. No external funding was received for this review. The authors declare no conflicts of interest related to this study. All efforts were made to conduct the review independently and objectively.

Results

Characteristics of the Included Studies

Based on a total participant pool of 11 462, the country distribution is as follows: USA had 252 participants (2.2%); the UK had 252 participants (2.2%); Germany had 378 participants (3.3%); Finland had 1530 participants (13.3%); Poland had 448 participants (3.9%); China had 5250 participants (45.8%); Saudi Arabia had 384 participants (3.3%); Turkey had 872 participants (7.6%); Indonesia had 452 participants (3.9%); the Philippines had 500 participants (4.4%); Pakistan had 623 participants (5.4%); Trinidad and Tobago had 354 participants (3.1%); Egypt had 232 participants (2.0%); and nCanada had 21 participants (0.18%). Figure 2 illustrates the distribution of participants across different regions and countries involved in the study.

Out of a total of 26 studies, 19 were cross-sectional studies (73.1%), 2 were longitudinal studies (7.7%), 2 were mixed methods studies (7.7%), 1 was an experimental study (3.8%), and 2 were qualitative studies (7.7%).

The identified domains include social media use, psychological impact, mental health, depression, TikTok use disorder, alcohol use, problem gambling, social media addiction, body image, problematic TikTok use, psychology, internet addiction, TikTok addiction, academic performance, media exposure, and anxiety. The characteristics of the included studies are listed in Table 1.^{5,9,17-40}

Key Psychosocial and Behavioral Influences on TikTok Engagement and Risk

Psychological factors. Several studies have found that psychological factors such as loneliness,⁴⁰ boredom,²³ low self-esteem,¹⁸ neuroticism,²⁸ procrastination,³² and depressive tendencies²⁸ significantly contribute to problematic TikTok use, magnifying co-existing mental health issues. A cross-sectional study by Barry et al²³ found that while TikTok use led to improved mood and decreased boredom, there appeared to be a decrease in feeling of connectedness with others, and self-perceived loneliness and Fear of Missing out (FOMO). It was found that after a short usage of just 20 min, users experienced significant increase in depression

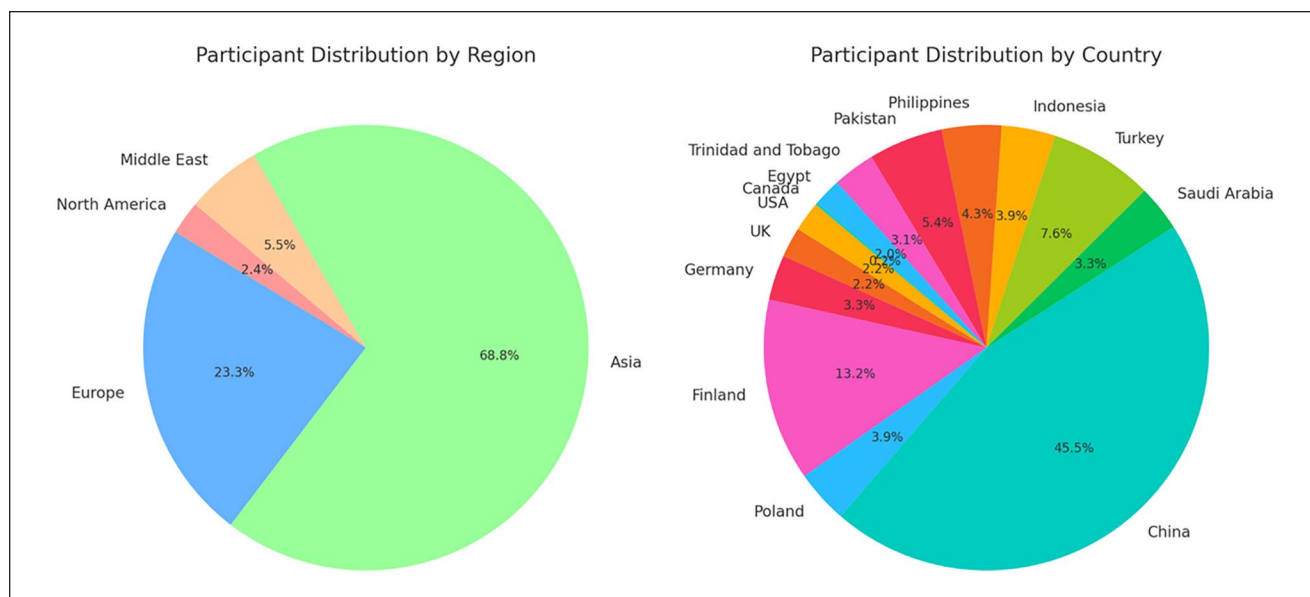


Figure 2. Participant distribution by region and country.

and anxiety, with depression scores increasing by 12% and anxiety levels rising by 15%, indicating a substantial psychological impact in short durations.²³ Similarly, higher levels of neuroticism and depressive inclinations correlated with increased engagement on TikTok as a coping mechanism.²⁸

Yao et al³⁹ identified in their study that individuals with higher levels of depression and social anxiety used TikTok more intensely, putting them at risk for developing problematic TikTok use, with a perceived inability to withstand distress likely playing a contributory role. Similarly, a study in Pakistan observed that excessive TikTok use can lead to poor academic performance and exacerbate mental health issues such as depression and anxiety, with academic performance being a significant mediator for both.⁴⁰ An exploratory study found that TikTok addiction is associated with the development of inferiority, superiority, and beauty complexes, which can lead to conflicts in self-perception and social comparison among users.³³ Another study by Wang and Shang,³⁷ reported that the user's awareness that the algorithm offering them videos tailored to their interests and their parasocial relationships with content creators on TikTok, which contribute to compulsive use of TikTok, which further leads to fatigue. The study by Wang et al provides valuable insights into the psychological mechanisms that contribute to TikTok's compulsive use. A retrospective study by Turuba et al³⁶ identified that TikTok can impact mental health negatively through repetitive exposure to distressing content, and mental health misinformation, specifically diagnosis and treatment during the COVID-19 pandemic.

Social influences. One study of Chinese adults observed that their sense of connectedness socially and fear of missing out toward content creators on TikTok (TikTokers) and their online community played a major part in the determination of their TikTok engagement.³⁷ This continuous need for connection often led to compulsive use as users felt increased platform engagement led to retention of relationships and exposure to topical subjects circulating the app. Among Saudi Arabian teenagers, a cross-sectional survey study found that the desire for more views through production or consumption was driven by physical attractiveness/lifestyle comparison rather than entertainment value, leading to increased levels of body dissatisfaction and negative self-image.^{18,22}

Akhtar and Islam²¹ found that both intrinsic and extrinsic motivators, including perceived enjoyment, social relationships, utilitarian need, social influence, social anxiety, and loneliness, significantly contribute to TikTok addiction. They observed that TikTok addiction often leads to conflicts such as technology-family conflict, technology-person conflict, and technology-work conflict, resulting in negative personal and social outcomes. Montag and Markett²⁸ demonstrated that TikTok Use Disorder (TTUD) is associated with high neuroticism and depressive symptoms, while negatively correlating with age. Problematic TikTok use is particularly prevalent among females, with high neuroticism and low conscientiousness increasing the likelihood of addiction.

Behavioral factors. Behavioral factors influencing TikTok use are well-documented in recent studies. Günlü et al²⁵ while developing a reliable and valid scale for measuring

Table 1. Characteristics of the Included Studies.

Author-year	Domain	Country	Sample characteristics	Objective	Study design	Interventions (if applicable)	Potential risk factors identified
Barry et al. (2024)	Social media use, psychological impact	USA	N=252 undergraduate students (ages 18 to 30), 69.8% female	To examine the effects of a short-term (20 min) TikTok usage on mood, stress, boredom, and perceived connectedness, and to explore how typical TikTok engagement relates to self-perception variables like loneliness, fear of missing out (FOMO), and life satisfaction	Experimental study	Participants were assigned to use TikTok, use another electronic device without accessing TikTok, or not use any electronic device for 20 min	Increased FOMO, loneliness, boredom, decreased connectedness to others
Hendrikse et al. (2024)	Social media use, mental health	UK	N=252 participants, mostly young adults, 86.1% female, mean age = 19.93 years	To investigate the relationship between Instagram and TikTok use with problematic social media use and mental well-being, focusing also on emotional investment in likes and followers	Correlational study using online surveys	N/A, non-interventional	Emotional investment in social media, high frequency of use, and high problematic social media use
Montag et al. (2024)	Depression, TikTok Use Disorder	Germany	N=378 users of social media and TikTok, aged 18 years and above (Mean age: 40.92 years, SD = 16.1); 124 males (32.8%) and 254 females (67.2%)	To validate the TikTok Use Disorder-Questionnaire (TTUD-Q) and explore its associations with personality traits and depressive tendencies	Cross-sectional survey study	N/A, non-interventional	High neuroticism, low conscientiousness, and depressive inclinations
Savolainen et al. (2024)	Alcohol use, problem gambling, social media use	Finland	N=1530, Mean age = 46.67 years, 50.33% male	To examine the long-term associations of weekly social media use on hazardous alcohol consumption and problem gambling	Exploratory longitudinal study	N/A, non-interventional	Social media use patterns, demographic variables (age, gender)
Rogowska et al. (2024)	Depression, TikTok Use Disorder	Poland	N=448 young adults aged 18 to 35 years (Mean age: 24.45 years, SD = 3.76); 214 men (48%), 234 women (52%). Majority had secondary education (52%) and were students (52%)	To investigate the relationship between procrastination, problematic TikTok use, and depression symptoms	Cross-sectional online survey	N/A, non-interventional	Procrastination, problematic TikTok use

(continued)

Table 1. (continued)

Author-year	Domain	Country	Sample characteristics	Objective	Study design	Interventions (if applicable)	Potential risk factors identified
Turuba et al. (2024)	Social media use, mental health	Canada	N = 21 youth, Median age = 18 (IQR 16-21), 57.1% identified as women, 42.9% bisexual/pansexual	To explore youth experiences using TikTok for mental health information during the COVID-19 pandemic	Qualitative interview study	N/A, non-interventional	Potential exposure to misinformation, addictive use, negative impacts from negative content
Wang et al. (2024)	Social media use, mental health	China	N = 379 university students, Mean age = 19.80, SD = 1.49, 56.7% female	To investigate the relationship between parasocial relationships, FoMO, algorithm awareness, and compulsive use of TikTok	Correlational study using online surveys	N/A, non-interventional	High algorithm awareness, parasocial relationships, FoMO, compulsive use
Akhtar et al. (2023)	Social media addiction	China	N = 579 adults, primarily 19-30 years old; 46.8% female, 53.2% male	To examine the antecedents and outcomes of TikTok addiction and the moderating role of parasocial relationships	Cross-sectional survey study using an online questionnaire	Participants were assigned to use TikTok, use another electronic device without accessing TikTok, or not use any electronic device for 20 min	Perceived enjoyment, social/parasocial relationships, social influence, social anxiety, loneliness
Auf et al. (2023)	Social media use, body image	Saudi Arabia	N = 384 Saudi teenagers, aged 12-19 years (67.7% female, 32.3% male), mean age 16.3 ± 2.0 years	To estimate the prevalence of TikTok use among teenagers in Saudi Arabia and investigate the association between TikTok use and social comparison, and body image	Cross-sectional survey using a self-administered questionnaire	N/A, non-interventional	Social comparison, negative body image
Günlü et al. (2023)	Problematic TikTok use, psychology	Turkey	N = 372 participants, 54.04% participants were female, age range was 18-40 (mean age: 24.35, SD: 2.3)	To provide a reliable and valid measurement scale for problematic TikTok use	Cross-sectional study: scale development and validation	N/A, non-interventional	Obsession with TikTok, escapism through TikTok, lack of control over TikTok usage
Qin et al. (2023)	Internet addiction, TikTok Use disorder	China	N = 633 adolescents aged 10-19 years (Mean age = 15 years; 51.2% male)	To explore factors predicting problematic TikTok use among Chinese adolescents	Cross-sectional online survey	N/A, non-interventional	Flow experiences including enjoyment, concentration, and time distortion, and active parental mediation
Raza et al. (2023)	Social media use, impact analysis	Turkey	N = 500 teenagers and youngsters, including students from metropolitan areas; 275 males (55%) and 225 females (45%)	To investigate the effects of TikTok usage on the personal, academic, and social lives of teenagers and youngsters during the third wave of the COVID-19 pandemic	Cross-sectional survey study	N/A, non-interventional	Increased screen time, Distraction from academic responsibilities, Disruption of normal sleep patterns

(continued)

Table 1. (continued)

Author-year	Domain	Country	Sample characteristics	Objective	Study design	Interventions (if applicable)	Potential risk factors identified
Yao et al. (2023)	Social media use, mental health	China	N=822 adults (Mean age: 27.5 years); 65.3% female, 34.7% male; 85% with a bachelor's degree	To explore how depression and social anxiety contribute to problematic TikTok use, mediated by boredom proneness and distress intolerance	Longitudinal study	N/A, non-interventional	Depression, social anxiety, boredom, and distress
Astuti et al. (2022)	TikTok use, depression	Indonesia	N= 108 respondents collected through Google forms; 82 women and 26 men, predominantly in early adulthood	To explore the relationship between TikTok use intensity, depression, and the role of social comparison as a mediator	Correlational quantitative study	N/A, non-interventional	High intensity of TikTok use, frequent social comparisons, indicators of depression
Cleofas et al. (2022)	Social media use, anxiety, depression	Philippines	N= 500 undergraduate students (aged 18-24 years) living in rural areas, 40.8% came from poor households; 59.8% were female	Identify prevalence and determinants of SMD among college students	Mixed methods study (explanatory design); Quantitative (cross-sectional); and Qualitative (descriptive)	N/A, non-interventional	SMD risk factors included (1) lower income status and (2) active TikTok usage. Young college students from poorer households had significantly greater odds of having SMD.
Fahrni et al. (2022)	Social media addiction	Indonesia	N= 344 eighth-graders, including 179 male pupils and 165 female students	To compare the levels of TikTok addiction between male and female junior high school students in Menganti Sub-District, Gresik District	Descriptive comparative study	N/A, non-interventional	Female gender, age/educational environment, potential peer influence
Gu et al. (2022)	Social media use	China	N= 384 TikTok users aged 17-58 years; 61.98% women and 51.30% students, with 83.59% reporting a monthly income below ¥10 000	Explore motives for TikTok use and profile TikTok users based on their motivations	Cross-sectional study, with latent profile analysis	N/A, non-interventional	Age, Gender, Student status, Education, Monthly income, Daily use time, Frequency of use, TikTok video posting

(continued)

Table 1. (continued)

Author-year	Domain	Country	Sample characteristics	Objective	Study design	Interventions (if applicable)	Potential risk factors identified
Nadeem et al. (2022)	TikTok addiction, mental health	Pakistan	N=33; young adults, includes a study group of 18 TikTok content consumers and a separate group of 15 TikTok content creators	To investigate TikTok addiction and its effects on young adults, exploring both consumer and creator dynamics	Qualitative research method; data collected from 2 sets of interviews—I with TikTok content consumers and I with content creators	N/A, non-interventional	High engagement with TikTok, addiction tendencies
Qin et al. (2022)	Internet addiction, TikTok use disorder	China	N=659 adolescents, aged between 10 and 19 years old; 43.9% male and 56.1% female; 24.42% in primary school, 40.32% in secondary school, 26.6% in high school, 5.96% held a diploma, and 2.52% were bachelor's degree holders	To investigate the relationship between information quality, system quality, enjoyment, concentration, time distortion, and TikTok addiction behavior among adolescents	Quantitative study using a self-report survey	N/A, non-interventional	Poor information quality, poor system quality, excessive enjoyment, lack of concentration, and distorted perception of time related to TikTok usage
Smith et al. (2022)	Social media addiction	Trinidad and Tobago	N=354 adult (Mean age: 23.61 years), university students, 67.3% female	To validate scales for assessing problematic Facebook and TikTok use, analyze cognitive pathways of addiction, and define cut-off scores for problematic use scales	Cross-sectional study with latent profile analysis	N/A, non-interventional	Young age, female gender, loneliness, and low self-esteem
Tian et al. (2022)	Internet addiction, social media	China	N=382, age <20 years (14%), 20-29 years (34%), 30-39 years (28%), >40 years (25%); male (45%), female (55%); educational level high school or below (35%), junior college (26%), bachelor (30%), master or above (9%)	To analyze the impact of interaction with TikTok's features on addiction, using the Stimulus-Organism-Response model and Opponent Process Theory	Cross-sectional study	N/A, non-interventional	Engaging with immersive, social, and control features of videos, perceived enjoyment and withdrawal, and procrastination

(continued)

Table 1. (continued)

Author-year	Domain	Country	Sample characteristics	Objective	Study design	Interventions (if applicable)	Potential risk factors identified
Zoghaib (2022)	Social media use, mental health	Egypt	N=232 teenagers and youth, mixed gender composition	To assess the impact of TikTok usage on anxiety levels among Egyptian teenagers and youth during the Covid-19 pandemic	Cross-sectional study with an online survey	N/A, non-interventional	Escapism, fame-seeking, young age
Zahra et al. (2022)	TikTok addiction, mental health, academic performance	Pakistan	N=400 university students (bachelor's students: 63%, master's: 32.5%, M.Phil: 4.5%); 56% male, 44% female)	To examine the impact of TikTok addiction on mental health illnesses and explore the mediating role of academic performance between TikTok addiction and mental health outcomes such as depression and anxiety	Cross-sectional study using a structured questionnaire	N/A, non-interventional	Excessive screen time, distraction from academics, high levels of depression and anxiety
Su et al. (2021)	Internet addiction, TikTok use disorder	China	N=208 young adults participated in the survey. For the fMRI experiment, 30 healthy students, aged 19-30, participated (mean age 23.73, SD 2.38)	To explore the correlation between problematic TikTok Use and self-control among young adults, and to investigate brain activation in response to TikTok video stimuli	Mixed Methods (Survey study and fMRI experiment)	Participants in the fMRI experiment watched personalized videos and generalized videos in a controlled setting	TikTok usage time, role in TikTok (viewer or creator), and self-control levels
Sabir et al. (2020)	TikTok addictions, social media disorders	Pakistan	N=190 university students surveyed, 49.5% males and 50.5% females	To investigate the impact of TikTok addiction on youth, including the emergence of social and psychological disorders	Quantitative Survey Study	N/A, non-interventional	Inferiority and superiority complexes, depression, and other psychological disorders
Liu et al. (2020)	Media exposure, mental health	China	N=1118 adults; 45.9% male, 54.1% female. Age distribution: 85.5% aged 18-40, 4.1% under 18, 9.9% aged 40-60, 0.2% over 60. Education: 80% university graduates. Socioeconomic status: 53.7% middle class, 36% lower to middle class, 10.3% middle to upper class	To explore the relationship between various media exposures during COVID-19 and anxiety, mediated by the effects of media vicarious traumatization	Cross-sectional online survey	N/A, non-interventional	Exposure to official, commercial, social, and overseas media, geographical proximity to pandemic

problematic TikTok by adapting from the Instagram Addiction Scale, identified obsession, escapism and lack of control as the 3 sub dimensions of problematic TikTok use. A correlational study conducted by Hendrikse and Limniou²⁶ which included 252 young adults from the United Kingdom established that longer time spent on TikTok can lead to problematic social media use and higher depression scores. The study further identified that greater time spent on TikTok predicted higher self-esteem scores, indicating that users likely experienced low self-esteem prior to TikTok use. A study from Poland, observed a significant positive correlation between problematic TikTok use, depression symptoms, and procrastination, indicating the need to explore treatment options.³²

One study in the Philippines sought to investigate the social and entertainment preferences of undergraduates living in remote areas. Their findings demonstrated that students preferred TikTok for entertainment due to limited social or recreational opportunities in their respective localities. It also illustrated that students of lower socioeconomic status engaged more frequently on TikTok.¹⁹ One reason for this trend is that the platform is free to use, hence preference of it over other leisure activities which may require payment, promoting prolonged and more regular engagement with the app.²⁰

Gu et al²⁰ explored TikTok user profiles and found that frequent, daily use of TikTok was associated with higher addiction levels, driven by motivations such as social rewards, trendiness, escapism, and the allure of novelty. Zoghaib et al¹⁷ similarly reported that excessive TikTok use for entertainment and social interaction is often driven by escapism, fame-seeking, and social interaction, patterns that parallel behaviors observed in other forms of behavioral addiction.

Tiam et al³⁸ highlighted in their study that TikTok's interactive features promote habitual/excessive use by activating user's perceived enjoyment and feelings of withdrawal. Through both positive and negative reinforcement, a user is compelled to repeatedly interact with a video to maintain a positive emotion or to avoid a negative emotion. This study further highlighted the role of procrastination in moderating the relationship between withdrawal and problematic use symptoms, reinforcing findings from a questionnaire-based study in Turkey, where 500 teenagers and young adults reported significant disruptions in their personal, academic, and social lives due to TikTok's addictive nature.³¹ They perceive TikTok as a safe space to discuss mental health issues, yet they also recognize the potential harm through repetitive exposure to distressing content and misleading information on mental health diagnoses and treatments.³⁶ Adding to the understanding of TikTok's potential for addictive engagement, a study by Su et al³⁵ utilizing neuroimaging also observed that a higher activation of areas of brain's reward system (dMPFC subsystem of

default mode network, ventral tegmental area) were induced by TikTok-recommended personalized videos when compared to non-personalized videos. The study further identified that by activation of specific areas in the brain, TikTok recommended videos may be seen as higher value than non-personalized videos, leading to more engagement with TikTok, suppression of ongoing internally focused thoughts, or task-irrelevant spontaneous activity, higher level of attention and loss of self-control.³⁵ This direct interaction with neurological reward pathways not only increases engagement but may also contribute to a loss of self-control, indicating TikTok's potential for addictive usage.

Usage Patterns/Trends and TikTok Problematic Use Prevalence

As it is yet to be defined as a mental disorder by ICD 11 or DSM 5, demographics data is less readily available. Various studies have attempted to assess the global prevalence of problematic TikTok use among young users. For example, a study conducted in Trinidad and Tobago to validate the Problematic TikTok Use Scale (PTTUS) found that problematic TikTok use was prevalent in 8.7% of the sample, with a higher rate of problematic use among young females.⁵ This vulnerability was associated with practices like social comparison and peer validation. Similarly, another study focusing on eighth graders in Indonesia using the TikTok Addiction Scale found a similar pattern, with 15.59% male students in the high category (with 5.37% in very high) and 25.31% male students in the high category (with 12.02% in very high). This study reported that female students spending an average of 3 h per day on the app compared to 1.5 h for male students.²⁴

Based on our analysis of these studies, we found that the pooled prevalence of TikTok use was 8141 participants out of a total pool of 10 154 (80.19%). The highest usage was observed among young adults aged 18 to 29 years, with significantly higher rates among females and individuals from lower socioeconomic backgrounds. The prevalence rates were derived from descriptive statistics based on the proportion of participants who reported using TikTok or displaying certain behaviors related to TikTok usage. The usage patterns/trends, statistical measures, outcomes, and implications are listed in Table 2.

TikTok Usage Patterns and Behavioral Impacts During COVID-19

We noted that several studies identified that the COVID-19 pandemic appears to have played an important part in increasing TikTok use among children and young adults, as many were forced to participate in lockdowns at home with little alternative options available to engage with peers. Cleofas¹⁹ in a mixed methods study based on a sample of

Table 2. Trends, Statistical Measures, Outcomes, and Implications of the Included Studies.

Author-year	Prevalence rates of TikTok use (%)	Usage patterns/trends	Statistical measures	Key findings	Implications
Barry et al. (2024)	84/252 (33.3)	Participants typically engaged with TikTok daily; the study reported changes in mood and stress levels after just 20 min of usage, indicating a significant psychological impact in short durations	ANOVA, paired-sample t-tests	-TikTok use reduced stress and boredom compared to no screen use but led to lower feelings of connectedness -Regular TikTok use was correlated with higher levels of FOMO and loneliness, suggesting possible adverse effects on social health	Highlights the need for awareness and potential interventions to balance the benefits and risks of TikTok use among young adults
Hendrikse et al. (2024)	252/252 (100)	A significant portion of the study's participants (80.9%) reported using TikTok more frequently than Instagram; the analysis suggests that emotional investment, in terms of the value placed on likes and followers, significantly impacts how users interact with these platforms	Simple regression analyses	-Time spent on TikTok was significantly associated with higher Problematic Social Media Use (PSMU) scores ($\beta = .30$, $P < .001$) -Increased time on TikTok significantly predicted higher depression scores ($\beta = .20$, $P = .001$) -More time on TikTok correlated with higher self-esteem scores, which paradoxically indicates lower actual self-esteem ($\beta = .16$, $P = .012$) -TikTok usage did not predict loneliness; the importance placed on "likes" was significantly related to higher PSMU	The study highlights the need for monitoring social media use in clinical populations and suggests considering emotional investment as a potential area for interventions to improve mental well-being
Montag et al. (2024)	378/378 (100)	Higher levels of neuroticism were linked to greater tendencies toward TikTok Use Disorder (TTUD); lower levels of conscientiousness were associated with higher TTUD tendencies and this association was mediated by depressive tendencies	Descriptive statistics, mediation models, and correlation analyses (Pearson and Spearman correlations)	-TikTok Use Disorder negatively correlated with age ($r = -.445$, $P < .001$) -Higher in females compared to males (TTUD: $t = -3.25$, $P = .001$) -Positive associations found between neuroticism and TikTok Use Disorder ($r = .196$, $P < .001$) and between depressive symptoms and TikTok Use Disorder ($r = .309$, $P < .001$) -Full mediation observed for neuroticism-depression-TTUD link and near full mediation for conscientiousness-depression-TTUD link	Consider age, gender, and personality traits in TikTok addiction interventions
Savolainen et al. (2024)	214/1530 (14)	Starting with 8.90% of respondents using TikTok weekly at wave 1, usage consistently increased, reaching a peak of 16.85% by wave 4, before slightly declining to stabilize around 16.17% and 16.59% in wave 5 and 6, respectively	Linear multilevel regression, descriptive statistics	-Weekly TikTok and gambling community participation linked to hazardous drinking ($B = 0.60$, $P = .003$) -Weekly Instagram use linked to lower hazardous drinking ($B = 9.56$, $P < .001$) -Weekly TikTok use and gambling linked to problem gambling	-Monitor social media use to understand its impact on mental health and behaviors

(continued)

Table 2. (continued)

Author-year	Prevalence rates of TikTok use (%)	Usage patterns/trends	Statistical measures	Key findings	Implications
Rogowska et al. (2024)	448/448 (100)	The most frequent users (34.82%) used TikTok up to 5 times a day; majority spent up to 1 h on TikTok daily (38.39%); mainly used for entertainment (32.81%) and to escape from duties or problems (18.53%)	Descriptive analysis, t-tests, Pearson's correlation analysis, and structural equation modeling with bias-corrected percentile bootstrap for mediation analysis	<ul style="list-style-type: none"> -Procrastination positively correlated with problematic TikTok use ($r = .42, P < .001$) and depression ($r = .39, P < .001$) -Problematic TikTok use positively correlated with depression ($r = .38, P < .001$) -Procrastination partially mediated the relationship between problematic TikTok use and depression symptoms among young adults ($\beta = .04, P < .001$) 	Develop interventions targeting procrastination and TikTok use to reduce depression
Turuba et al. (2024)	21/21 (100)	Youth used TikTok for mental health information, with increasing use during the COVID-19 pandemic	Reflexive thematic analysis	TikTok provides access to mental health information, but concerns about misinformation and addictive use exist. Positive experiences from relatable content.	Highlights the need for critical consumption of information on TikTok and awareness of potential negative impacts. Emphasizes TikTok's role in making mental health information accessible.
Wang et al. (2024)	379/379 (100)	78.4% of participants spent more than 3 h daily on TikTok, 72.6% used it for over 5 years	SEM, Pearson correlation coefficient, ANOVA, Bootstrap	<p>Algorithm awareness has a positive effect on compulsive TikTok use. Parasocial relationships and FoMO contribute to compulsive use and fatigue. No significant link to life satisfaction.</p>	Indicates the importance of understanding the effects of algorithm awareness and parasocial relationships on compulsive use. Highlights need for awareness and potential interventions
Akhtar et al. (2023)	579/579 (100)	High daily engagement, with the platform being integrated into daily routines and exhibiting addictive usage patterns	Structural equation modeling	<ul style="list-style-type: none"> -TikTok addiction is significantly influenced by both intrinsic (eg, enjoyment, social relationships) and extrinsic motivators (eg, social influence) -Parasocial relationships enhance the impact of these motivators on addiction -Addiction leads to negative personal and social outcomes, such as conflicts with family, work, and personal well-being 	Insights from the study could help in designing interventions to reduce the addictive effects of TikTok and improve user well-being

(continued)

Table 2. (continued)

Author-year	Prevalence rates of TikTok use (%)	Usage patterns/trends	Statistical measures	Key findings	Implications
Auf et al. (2023)	343/384 (89.3)	Majority used TikTok for more than 2 h daily; high rates of social comparison and negative body image among users	Spearman's rank correlation, Mann-Whitney U test, and Chi-square tests	<ul style="list-style-type: none"> -TikTok users exhibited significantly higher social comparison scores (Median = 33.0, IQR: 28.0-38.0) compared to non-users (median = 28.0, IQR: 26.0-34.0), $P = .005$ -TikTok users demonstrated significantly lower body image scores (Median = 64.0, IQR: 54.0-72.0) compared to non-users (Median = 67.0, IQR: 58.0-73.0), $P = .037$ -Significant negative weak correlation between body image and comparison of abilities among TikTok users ($r_s = -0.113$, $P = .037$) 	The study highlights the need for public health interventions to address the impacts of TikTok on body image and social comparison among teenagers
Günlü et al. (2023)	372/372 (100)	High engagement with TikTok among participants, with some displaying excessive usage behaviors that characterize problematic social media use; frequent usage indicated by the high rates of obsession and lack of control over TikTok interactions; the usage involved components of escapism	Exploratory Factor Analysis, Confirmatory Factor Analysis, reliability tests (Cronbach's Alpha, McDonald's Omega, test-retest reliability)	<ul style="list-style-type: none"> -A 3-factor scale was developed: obsession, escapism, lack of control -Scale showed good construct validity and reliability (Cronbach's Alpha: .83-.90, McDonald's Omega: .84-.90, test-retest: 0.68-0.73) -Positive correlations between the scale and established addiction scales (BSMAS, SMD scale) 	The scale can be used for identifying levels of problematic TikTok use among the general population, aiding in psychological assessments and interventions
Qin et al. (2023)	633/633 (100)	High user engagement and prolonged use; Significant immersion and time distortion due to the platform's design and AI-driven content personalization	Path coefficient analysis using PLS-SEM, Cronbach's alpha, composite reliability, and average variance	<ul style="list-style-type: none"> -Enjoyment leads to concentration ($\beta = .714$, $P < .01$), and concentration leads to time distortion ($\beta = .693$, $P < .01$) -Concentration ($\beta = .305$, $P < .01$) and time distortion ($\beta = .371$, $P < .01$) significantly predicted problematic TikTok use -Active parental mediation significantly interacted with concentration to influence problematic TikTok use ($\beta = -.145$, $P < .01$) 	Targeted interventions focusing on reducing the factors leading from enjoyment to concentration and time distortion could help mitigate problematic TikTok use
Raza et al. (2023)	500/500 (100)	Extensive use of TikTok, especially during lockdown periods, with a focus on content creation and social interaction; significant usage noted in top metropolitan areas	Multiple ANOVA, simple regression tests	<ul style="list-style-type: none"> -TikTok usage has a statistically significant impact on personal, academic, and social life dimensions ($P < .01$ for all) -High engagement with TikTok correlated with changes in behavior and social interactions, as well as academic disruptions during the pandemic 	Indicates the need for balanced engagement with social media, especially during extended home stays, to mitigate negative impacts on young individuals' social and academic development

(continued)

Table 2. (continued)

Author-year	Prevalence rates of TikTok use (%)	Usage patterns/trends	Statistical measures	Key findings	Implications
Yao et al. (2023)	822/822 (100)	High engagement with TikTok among participants, with usage habits linked to psychological distress factors; significant use of TikTok for mood regulation, especially among those experiencing distress intolerance	Structural equation modeling	-Distress intolerance significantly mediated the relationship between both depression and social anxiety with problematic TikTok use -Boredom proneness did not significantly mediate the relationship between psychopathology and problematic TikTok use	The findings underscore the importance of addressing underlying psychological issues such as distress intolerance in interventions aimed at reducing problematic social media use
Astuti et al. (2022)	108/108 (100)	Respondents frequently used TikTok, with many opening the app more than 7 times a day and using it for 1 to 4 h per day	Regression analysis, t-test	-TikTok use was found to significantly correlate with depression, mediated by social comparisons -High frequency and duration of TikTok use were associated with higher levels of depression -Social comparisons acted as a mediator, enhancing the relationship between TikTok use and depression	The study highlights the need for awareness about the potential negative impacts of excessive social media use on mental health and suggests monitoring and moderation of use
Cleofas et al. (2022)	248/500 (49.6)	302/500 (60.4%) participants reported increased use of social media during the pandemic; for maintaining social ties, as an escape and stress relief, as a source of information, to support educational needs, and they were aware of the potential ill-effects on wellbeing	Bivariate and multivariate logistic regression analyses were used to identify factors associated with SMD	-The prevalence of SMD was 24.2% (121/500) among the sample -Lower socioeconomic status and active use of TikTok were significant predictors of SMD -Qualitative findings suggested that while social media, particularly TikTok, provides several benefits, it also poses risks related to excessive and problematic use	Target interventions for demographic factors and TikTok use to address SMD
Fahrni et al. (2022)	344/344 (100)	Male students predominantly fall into the "low" addiction category, while female students more frequently reach "moderate" addiction levels; differences in daily usage time between genders, influencing addiction levels	Non-parametric Mann Whitney method	-The study found significant differences in TikTok addiction levels, with male students typically showing lower addiction levels than female students -Effective use of a specialized addiction scale to quantify TikTok addiction, highlighting varying levels of engagement	The findings suggest a need for targeted educational and intervention strategies addressing social media use, tailored to different gender dynamics within school settings

(continued)

Table 2. (continued)

Author-year	Prevalence rates of TikTok use (%)	Usage patterns/trends	Statistical measures	Key findings	Implications
Gu et al. (2022)	384/384 (100)	Socially rewarding self-presentation (mean: 3.15, SD: 1.02): a moderate level of using TikTok for social rewards, to gain approval or attention from others Trendiness (mean: 3.34, SD: 1.04): users moderately agreed that they used TikTok because it is trendy and popular Escapist Addiction (mean: 3.59, SD: 0.93): above moderate agreement on using TikTok for escapism Novelty (mean: 3.69, SD: 1.05): high agreement that novelty drives TikTok usage	Confirmatory factor analysis, multinomial logistic regression, and multivariate analysis of variance to explore differences between user profiles and the predictive effects of usage patterns and demographic factors on profile membership	-Monthly income below ¥5000 and using TikTok every day were associated with membership in the overall medium motives profile -Daily use and frequency of TikTok use were significantly associated with membership in the overall high motives profile -TikTok users who had never posted a video on the app were less likely to be in the overall high motives group -Lower educational attainment was associated with membership in the escapist addiction and novelty motives profile	Address socioeconomic factors in interventions for problematic social media use
Nadeem et al. (2022)	33/33 (100)	Users reported varied TikTok usage from minimal to extensive, with some using the platform for more than 10h daily. Majority used TikTok during nighttime, indicating potential disruption to normal daily routines and sleep patterns	NA	-TikTok use varies widely among young adults, with significant engagement particularly during nighttime -Content creators often feel compelled to produce multiple videos daily, indicating high pressure and potential for addiction -Distinctions in usage patterns between consumers and creators highlight different exposure levels and impacts on daily life and mental health	Suggests the need for guidelines and interventions to manage TikTok usage among young adults to prevent addiction and mitigate negative mental health outcomes
Qin et al. (2022)	659/659 (100)	Adolescents were highly engaged with TikTok, often experiencing enjoyment, concentration, and time distortion, which led to increased usage and potential addiction	Partial least squares method, bootstrapped confidence intervals, and t-statistics	-Info/system quality linked to enjoyment and concentration ($< \text{Beta} = .225$, $t\text{-value} = 3.163$) -Enjoyment and concentration mediate TikTok addiction behavior	Improve information/system quality on TikTok to reduce addiction

(continued)

Table 2. (continued)

Author-year	Prevalence rates of TikTok use (%)	Usage patterns/trends	Statistical measures	Key findings	Implications
Smith et al. (2022)	173/354 (48.9)	High engagement among university students with daily use, with distinctive cognitive and behavioral patterns associated with TikTok use; TikTok users spent more time daily compared to Facebook users	Latent profile analysis, Receiver operating characteristics	<ul style="list-style-type: none"> -Validated the problematic use scales for both Facebook and TikTok with identified cut-off scores -Found significant differences in addiction pathways and manifestations between Facebook and TikTok users -Identified specific psychological traits that correlate with higher levels of social media addiction 	The study suggests the need for tailored intervention strategies that consider distinct social media platforms and user demographics to effectively address social media addiction
Tian et al. (2022)	382/382 (100)	Users frequently interact with various TikTok features categorized as immersive, social, and control types	Structural equation modeling	<ul style="list-style-type: none"> -Interaction with TikTok's video features significantly influenced user addiction by enhancing both perceived enjoyment and feelings of withdrawal -Procrastination strengthened the link between withdrawal feelings and addiction, indicating that delaying tasks may exacerbate addictive behaviors -The study's structural model revealed significant paths from features to addiction, mediated by emotional responses and moderated by procrastination -Motivations such as escapism and fame-seeking significantly influenced TikTok usage -No direct correlation found between anxiety levels and TikTok usage, suggesting other mediating factors might influence this relationship 	<p>Suggests that TikTok's design features play a role in fostering addictive behaviors, pointing to the need for regulatory considerations to mitigate addiction risks</p> <p>Indicates the necessity to understand the underlying motivations for TikTok usage among youth to address potential mental health issues</p>
Zoghaib (2022)	232/232 (100)	TikTok was extensively used for entertainment and social interaction, for reasons including escapism, fame-seeking, and social interaction; the platform served as a significant social connector during the pandemic with usage peaks during evening hours	Descriptive analysis, regression models		
Zahra et al. (2022)	400/400 (100)	Many students spent 1-2 h daily on TikTok, with compulsive use and difficulty focusing on academic tasks due to frequent use; mixed effects on academic performance, with some students experiencing severe disruptions	Structural Equation Modeling	<ul style="list-style-type: none"> -TikTok addiction significantly impacts students' academic performance and mental health, specifically increasing depression and anxiety levels -Academic performance significantly mediates the relationship between TikTok addiction and mental health outcomes, indicating that poor academic performance due to TikTok addiction exacerbates depression and anxiety 	Highlights the need for interventions to manage TikTok use among students to prevent negative academic and mental health outcomes

(continued)

Table 2. (continued)

Author-year	Prevalence rates of TikTok use (%)	Usage patterns/trends	Statistical measures	Key findings	Implications
Su et al. (2021)	153/208 (73.6)	Most users engaged with TikTok for less than an hour per day, 30% used it for more than 1 h but less than 2 h, and only a small portion (3%) used the app for more than 2 h per day	Cronbach's alpha, Pearson's correlation, and t-tests	<ul style="list-style-type: none"> -PTU scores positively correlated with daily TikTok usage time ($r = .474, P < .001$) -PTU negatively correlated with self-control scores ($r = -.279, P < .001$) -fMRI results showed significant brain activation differences in response to personalized versus generalized video content, indicating varied engagement with content type 	Teach responsible social media use through digital literacy programs
Sabir et al. (2020)	NR	High frequency of TikTok usage among university students, contributing to various psychological complexes and disorders	Descriptive statistics, reliability analysis (Cronbach's alpha), and inferential statistics	<ul style="list-style-type: none"> -TikTok addiction is prevalent among Pakistani youth and associated with various psychological disorders -The addiction contributes to complexes such as inferiority, superiority, and beauty complexes among users -Disorders linked to TikTok use include impacts on social behavior and personal well-being 	The findings underscore the need for awareness and interventions to address social media addiction among youth, focusing on its psychological impacts
Liu et al. (2020)	NR	Significant daily engagement to COVID-19 information; increased media consumption during peak outbreak periods, with varying engagement across different types of media reflecting information-seeking and coping behaviors during the pandemic	Pearson correlation, ANOVA, hierarchical regression analyses	<ul style="list-style-type: none"> -Media vicarious traumatization served as a mediator in the relationship between media exposure and anxiety -Differences in anxiety levels were noted based on the type of media exposure, with commercial and overseas media showing direct and mediated impacts on anxiety -Geographic proximity to the pandemic's epicenter moderated the relationship between media exposure and vicarious traumatization 	The study suggests that media outlets consider the potential psychological impacts of their content during crises, especially for individuals in regions close to the epicenter of a pandemic

500 rural young college students (18 to 24 y/o) during COVID-19 related community quarantine found that 24.2% of the sample suffered from Social Media Disorder (SMD), with lower socioeconomic status and active TikTok being significant predictors.¹⁹ Another study observed that, during global events like pandemics, cultural norms and media exposure intensity shifted significantly, leading to more pronounced TikTok use patterns and increased time spent on the platform. This study also found that adults had a significant daily engagement with COVID-19 information on TikTok during peak outbreak periods, highlighting its role as a primary source for community interaction, information-seeking, and coping behaviors.²⁷ The increased use of TikTok can also be viewed as an escape from harsh reality of living through a global pandemic, as this platform has been used by many to escape from reality by diverting attention from stressors and/or personal problems.²⁵ In addition, during pandemic lockdowns, a study of 500 young adults in Turkey found that high TikTok usage was associated with notable shifts in user behaviors, social interactions, and academic performance (Table 3).³¹

TikTok Versus Other Social Media Platforms

Studies show that TikTok's engagement model are significantly different from that of other platforms in the context of its design, which essentially encourage more frequent use and stronger emotional investment. Hendrikse and Limniou²⁶ found that users engage with TikTok more frequently than with platforms like Instagram, driven by an emotional investment in likes and followers. This investment often translates to a fixation on approval metrics, which negatively affects users' interactions on other social media platforms. Additionally, time spent on TikTok correlates with higher Problematic Social Media Use (PSMU) scores and increased depression—but paradoxically and interesting findings of higher self-esteem scores.²⁶ This suggests that while TikTok may provide users with validation that momentarily boosts self-esteem, but most importantly it may also negatively impact mental health through excessive engagement and social comparison.

Supporting this, Smith and Short⁵ observed that university students spend more time on TikTok than on Facebook, exhibiting distinctive cognitive and behavioral patterns that indicate higher levels of engagement on TikTok. These findings point to TikTok's unique ability to capture attention and encourage prolonged use compared to traditional social media platforms, which may partly explain why it contributes to higher PSMU scores and complex emotional responses. Together, these studies highlight TikTok's particular potency in driving addictive behaviors, differentiating it from other platforms and raising concerns about its psychological impact on frequent users.

Evaluation of Bias

According to the results of the JBI assessment scores, all 8 dimensions in the JBI checklist have been met by Hendrikse and Limniou,²⁶ Hendrikse,⁵ Rogowska and Cincio,³² Wang and Shang,³⁷ Akhtar and Islam,²¹ Auf et al,¹⁸ Smith and Short,⁵ Tian et al,³⁸ Zoghaib,¹⁷ and Liu and Liu.²⁷ This implies that these studies are less biased because they followed rigorous methods and provided detailed information.

Montag and Markett²⁸ did not use objective criteria to measure the condition,²⁸ while Zahra et al⁴⁰ failed to state strategies to deal with confounding factors which indicate moderate risk for bias as far as standardization measurement is concerned as well management of confounders.

Günlü and Sabir's study did not identify or state strategies used in handling confounding variables but other aspects met JBI criteria thus this may introduce some moderate level bias due only to potential effects from confounder(s).^{25,33}

Qin et al,³⁰ Raza et al,³¹ Fahrni et al,²⁴ and Gu et al²⁰ demonstrated a partial compliance with the checklist. Their primary shortcomings were in not using objective measurement criteria for the condition and not addressing confounding factors, presenting a higher risk of bias that may affect the credibility of their findings.

Astuti et al²² and Qin et al³⁰ were the only studies that did not clearly define the inclusion criteria. Along with issues in standard measurement of the condition and handling of confounding factors, these studies exhibit a higher risk of bias, suggesting caution in interpreting their outcomes.

For Savolainen and Oksanen³⁴ the representativeness of the exposed cohort was rated as a national sample, scoring 1. The non-exposed cohort selection was not mentioned, scoring 0. Ascertainment of exposure was through self-reported surveys, scoring 1. The outcome of interest at the start was not stated, scoring 0. Cohort comparability was adjusted for key factors, scoring 1. Outcome assessment used validated instruments, scoring 1. The follow-up period of 3 years was adequate, scoring 1. Follow-up rate was 58.1%, scoring 1. Total score is 6/9.

The NOS assessment for Yao et al³⁹ is as follows: The representativeness of the exposed cohort was somewhat representative, scoring 1. The non-exposed cohort selection was not applicable, scoring 0. Ascertainment of exposure was through secure records, scoring 1. The outcome of interest at the start was confirmed, scoring 1. Cohort comparability was controlled for key factors, scoring 2. The outcome assessment was self-reported, scoring 1. The follow-up period was adequate, scoring 1. The follow-up was complete, scoring 1. The total score is 8 out of 10 (Table 4).

The evaluation of the risk of bias in the qualitative study by Nadeem and Ahmed²⁹ on TikTok addiction among young adults reveals strengths and areas for improvement. The

Table 3. Cross-Sectional Studies—Risk of Bias Assessment.

Study	1. Were the criteria for inclusion in the sample clearly defined?	2. Were the study subjects and the setting described in detail?	3. Was the exposure measured in a valid and reliable way?	4. Were objective, standard criteria used to measure the condition?	5. Were confounding factors identified?	6. Were strategies to deal with confounding factors stated?	7. Were the outcomes measured in a valid and reliable way?	8. Was appropriate statistical analysis used?
Hendrikse et al. (2024)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Montag et al. (2024)	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Rogowska et al. (2024)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wang et al. (2024)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Akhtar et al. (2023)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Auf et al. (2023)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Günlü et al. (2023)	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Qin et al. (2023)	Yes	Yes	Yes	No	No	No	Yes	Yes
Raza et al. (2023)	Yes	Yes	Yes	No	No	No	Yes	Yes
Astuti et al. (2022)	No	Yes	Yes	Yes	No	No	Yes	Yes
Fahrni et al. (2022)	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Gu et al. 2022	Yes	Yes	Yes	No	No	No	Yes	Yes
Qin et al. (2022)	No	Yes	Yes	No	No	No	Yes	Yes
Smith et al. (2022)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tian et al. (2022)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zoghaib (2022)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Zahra et al. (2022)	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Sabir et al. (2020)	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Liu et al. (2020)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4. Longitudinal Studies—NOS Assessment.

Criteria	Description (Savolainen et al., 2024)	Score (Savolainen et al., 2024)	Description (Yao et al., 2023)	Score (Yao et al., 2023)
Representativeness of the exposed cohort	National sample of Finnish adults from various regions, representing the population distribution.	1	Somewhat representative	1
Selection of the non-exposed cohort	Not explicitly mentioned.	0	Not applicable	0
Ascertainment of exposure	Self-reported surveys conducted at 6 time points.	1	Secure record	1
Demonstration that outcome of interest was not present at start of study	Not explicitly stated.	0	Yes	1
Comparability of cohorts on the basis of the design or analysis	Adjusted for age, gender, mental health, and extroversion.	1	Controlled for key factors	2
Assessment of outcome	Validated instruments (AUDIT-C for hazardous alcohol use, PGSI for problem gambling).	1	Self-report	1
Was follow-up long enough for outcomes to occur	Three years with 6 waves of data collection.	1	Yes	1
Adequacy of follow-up of cohorts	58.1% follow-up rate at the sixth wave.	1	Complete follow-up	1
Total score		6		8

clear mention of research aims and the use of an appropriate qualitative methodology are notable strengths. However, there are significant gaps in reporting that affect the study's transparency and reliability. The recruitment strategy, while suitable for qualitative inquiry, may introduce bias due to its reliance on snowball sampling, which might not fully represent the broader population of TikTok users. There was information on the management of ethical issues and the relationship between researchers and participants that was missing. This information is essential for assessing the study's ethical integrity and potential influence of the research on the data collected. Even though software such as NVivo was used to demonstrate a systematic approach to data management, there was an absence of detailed explanation of the coding process, theme development and data saturation that raises concerns about the depth of the analysis. These gaps in data management are critical as they can affect the study's confirmability and dependability, impacting the overall trustworthiness of the findings.

The study by Turuba et al,³⁶ on the other hand, exhibits a methodological framework with a clear statement of research aims and appropriate use of qualitative methodology. The study's recruitment strategy targeted youth aged 12 to 24 years who used TikTok for mental health information, which would align with the study's objectives. The data collection process was comprehensive, utilizing semi-structured

interviews to gather rich, detailed data. The relationship between researchers and participants was adequately considered, with measures taken to build rapport and ensure confidentiality. Ethical considerations were thoroughly addressed, including obtaining ethical approval, informed consent, and maintaining participant confidentiality.

The data analysis in Turuba et al's study involved thematic analysis conducted using NVivo, peer debriefing, and reflection on biases, which enhances the rigor and depth of the analysis. The study provides a clear statement of findings, detailing the themes around the use of TikTok for mental health information and its impact. Overall, the study offers insights into the role of TikTok in youth mental health information dissemination during the pandemic.

These findings are summarized in Table 5, highlighting the key aspects of the studies evaluated.

The experimental study by Barry et al²³ is graded as having low risk of bias. Most domains exhibit a low risk, with only some concerns in the domain of deviations from intended interventions, primarily due to the potential lack of participant blinding to the intervention received (Table 6).

The mixed methods studies' quality assessment findings are depicted in Table 7. Cleofas et al's¹⁹ study provides a detailed rationale for using a mixed methods design to explore the prevalence and determinants of Social Media Disorder among college students.¹⁹ The integration of

Table 5. CASP Qualitative Checklist for the Studies.

CASP Question	Nadeem et al. (2022)	Turuba et al. (2024)
Was there a clear statement of the aims of the research?	Yes	Yes
Is a qualitative methodology appropriate?	Yes	Yes
Was the research design appropriate to address the aims of the research?	Yes	Yes
Was the recruitment strategy appropriate to the aims of the research?	Yes	Yes
Was the data collected in a way that addressed the research issue?	Yes	Yes
Has the relationship between researcher and participants been adequately considered?	No information provided	Yes
Have ethical issues been considered?	No information provided	Yes
Was the data analysis sufficiently rigorous?	Partially	Yes
Is there a clear statement of findings?	Yes	Yes
How valuable is the research?	Yes	Yes
Overall Grade	C+	A

Table 6. Cochrane's Risk of Bias Assessment.

Bias domain	Description	Risk of bias
Random sequence generation (selection bias)	The study employed a random assignment of participants to the 3 intervention groups.	Low
Allocation concealment (selection bias)	The method of allocation concealment was not explicitly described in the paper.	Unclear
Blinding of participants and personnel (performance bias)	Blinding participants was impossible due to the nature of the interventions.	High
Blinding of outcome assessment (detection bias)	The outcome assessors were not blinded to the group assignments.	High
Incomplete outcome data (attrition bias)	The paper reported no missing data and provided complete outcome data for all participants.	Low
Selective reporting (reporting bias)	All prespecified outcomes were reported in the paper.	Low
Other bias	There were no other significant sources of bias identified.	Low
Overall: low risk of bias		

qualitative and quantitative data is effective, but the study does not fully address potential divergences between the 2 types of data. Su et al's,³⁵ study explores the correlation between Problematic TikTok Use and self-control, integrating qualitative and quantitative components effectively. However, similar to Cleofas et al,¹⁹ it does not adequately address inconsistencies between the quantitative and qualitative results, which could impact the overall findings (Table 7).

Discussion

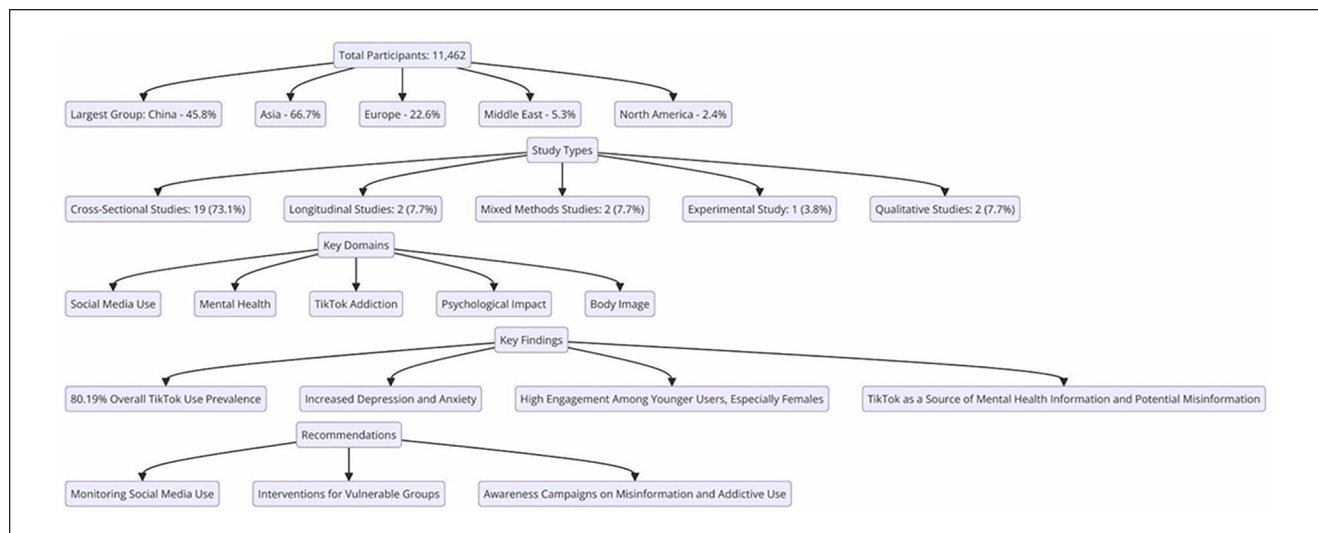
This review synthesizes findings from 26 studies involving a total of 11 462 participants. The studies highlight a generalized prevalence of TikTok use at 80.19% with significant variations across different demographics, including

geographic location, age, and socioeconomic status. The findings emphasize the impact of TikTok on psychosocial and behavioral aspects of users' lives, particularly among young adults and individuals from lower socioeconomic backgrounds. Figure 3 depicts the analysis of various studies on TikTok use, highlighting participant distribution by country and region, the study types, the primary domains explored, the key findings related to psychological, social, behavioral, and demographic factors influencing TikTok usage, in addition to recommendations.

Given the substantial impact of TikTok use on individuals' mental health, particularly in increasing levels of anxiety and depression, several recommendations emerge from the analysis. Implementing digital literacy programs in educational institutions may play an important role in educating students about the potential psychological impacts of

Table 7. Mixed Methods Studies—Methodological Quality Assessment.

Methodological quality criteria	Cleofas et al. (2022)	Su et al. (2021)	Comments
1. Is there an adequate rationale for using a mixed methods design to address the research question?	Yes	Yes	Both studies provide a clear rationale for using mixed methods to comprehensively understand the prevalence and determinants of Social Media Disorder (SMD) and the correlation between Problematic TikTok Use (PTU) and self-control, respectively.
2. Are the different components of the study effectively integrated to answer the research question?	Yes	Yes	The qualitative and quantitative components are effectively integrated in both studies to address the research questions, providing a holistic view of the issues being studied.
3. Are the outputs of integrating qualitative and quantitative components adequately interpreted?	Yes	Yes	Both studies adequately interpret the integration of qualitative and quantitative data, offering comprehensive insights into the findings.
4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	No	No	Neither study thoroughly addresses potential divergences and inconsistencies between quantitative and qualitative results, which could affect the overall interpretation of the findings.
5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?	Yes	Yes	Both studies adhere to the quality criteria for qualitative and quantitative methods, ensuring robustness and reliability in their respective components.

**Figure 3.** Summary of findings on TikTok use and its impact across multiple studies.

excessive social media use. These programs should include strategies for managing screen time and promoting healthy digital habits.^{23,28}

While existing research explores various aspects of TikTok's mental health impacts, the connection between loneliness and TikTok usage duration remains underexplored. This gap is notable, as only 1 study offers some insight in this area, suggesting that individuals with pre-existing feelings of

isolation and loneliness may experience heightened loneliness with frequent TikTok use.²⁶ This observation of being isolated became more problematic and pronounced during covid during the COVID-19 lockdown caused significant changes in individuals' behaviors, impacting numerous domains of life (ie, academic performance, interpersonal relationships, and socializing with peers), as people were more inclined to scroll through viral videos on TikTok during

the isolation period.³¹ Contrary to that, some studies found no direct link between loneliness and TikTok use, others indicated that pre-existing feelings of isolation could exacerbate loneliness with frequent TikTok use, and the pandemic lockdown further amplified changes in behavior and social interactions.

Active parental monitoring of children's problematic use of TikTok is crucial to reduce their concentration, as users experience a distortion, which seems to be amplified by TikTok's algorithm.³⁰ Such time distortion may lead to prolonged use that interferes with daily responsibilities and importantly academic performance during their school and college years. Research suggests that problematic TikTok use mediates the relationship between procrastination and depression, highlighting the need for monitoring and regulating usage to curb negative impacts on behavior.^{30,32}

This review also raises significant concerns about risky behaviors associated with TikTok usage. Savolainen and Oksanen³⁴ observed that there is a correlation between weekly TikTok consumption, hazardous alcohol use, and problematic gambling. They discussed other studies and observed how this is likely due to people engaging in online discussion about gambling. Issues with content moderation was also raised by other studies that assessed content related to cannabis, MDMA, and vaping on TikTok. These studies found predominantly positive depictions of these substances often emphasized through humor, with 54.14% (of 881 total videos) for cannabis, 34.9% (of 498 total videos) for MDMA, and 63% (of 808 total videos) for e-cigarettes.⁴¹⁻⁴³ These positive depictions can likely influence young users to perceive these substances and behaviors as acceptable or desirable. However, it is important to acknowledge that Interestingly, TikTok's potential is not solely negative; it can also offer supportive content. For example, Russell et al⁴⁴ highlighted that the platform can be used to share positive, recovery-oriented messages, potentially aiding those seeking support and community in their recovery journey. They reviewed 48 most popular videos, and found that the most common video themes were sharing a journey from active SUD to recovery (40.2%) and sharing/celebrating a recovery milestone (37.8%).⁴⁴ This dual potential of TikTok highlights the need for balanced content moderation and the promotion of positive, recovery-oriented content alongside the existing, more problematic depictions. While TikTok's algorithm can expose children and young adults to harmful content, it also holds potential as a platform for positive influence and recovery support. Balancing these risks and benefits is essential for nurturing a healthier digital environment.

In terms of mental health, a recent systematic review by McCashin and Murphy⁴⁵ identified a notable gap in high-quality content analyses on TikTok, particularly regarding mental health, despite the platform's engagement with young users. This review identified a limited set of studies

that primarily focused on topics such as COVID-19, dermatology, and eating disorders, with even fewer addressing mental health directly. Despite these limitations, the review authors acknowledged TikTok's potential role in educating a broad audience on mental and public health issues, particularly given the platform's engagement with the youth. The review highlighted a missed opportunity for mental health promotion through institutional content.⁴⁵

In recent years, social media platforms like TikTok have become powerful mediums for disseminating information on a wide range of topics, including mental health. However, the nature of user-generated content on these platforms presents unique challenges and opportunities. A cross-sectional study analyzing 100 videos tagged with “#mental health” found that user-generated content of individuals talking about their own mental health received more engagement than videos created by healthcare professionals, highlighting a preference for personal experiences over professional educational content.⁴⁵ A similar study in 2024 observed that videos about depression and anxiety engage viewers more when they describe symptoms rather than when they offer educational content from health professionals.⁴⁶ This focus on symptoms risks incorrect self-diagnoses and commercial exploitation through targeted advertisements for mental health apps and supplements with tenuous claims to improve mental health, such as magnesium.⁴⁷ Misinformation on TikTok, particularly regarding psychiatric treatments, poses significant risks to mental health by potentially exacerbating existing conditions. The platform's algorithm can continuously present misleading content to vulnerable individuals, such as those with paranoia or distrust of medications, worsening their symptoms and decreasing treatment adherence. Another concern is that the creation of content around mental health issues may inadvertently lead to their “romanticization.” This occurs when mental health conditions are portrayed in a manner that glamorizes their seriousness. When combined with efforts to de-stigmatize mental illnesses, this could inadvertently lead to individuals using mental health conditions to justify certain personal behaviors.⁴⁸

TikTok, like other high-visual social media (HVSM) platforms, contributes to competitive appearance comparisons, with implications for body image and mental health. A unique risk with high visual social media (HVSM) platforms like TikTok is their promotion of intense physical appearance scrutiny, fostering competitive comparisons and edited perfection, which can exacerbate mental health issues.⁴⁹ Research links TikTok use to negative body image perceptions, and binge eating disorder recovery content sometimes inadvertently reinforces diet culture, complicating genuine recovery efforts.^{22,50}

Further research into how social interactions influence behavior, particularly among the youth, has been backed by neuroimaging findings. For example, Sherman et al⁵¹ found

that the nucleus accumbens becomes active in teenagers when they receive or see likes on social media, emphasizing the addictive draw of peer approval. TikTok's algorithms seem to capitalize on this, as personalized video recommendations stimulate brain areas like the default mode network (DMN) and ventral tegmental area (VTA), intensifying engagement and underscoring the potential for problematic use.^{35,52,53}

Our review reveals notable mental health concerns related to TikTok use, with multiple studies showing a clear link between excessive engagement on the platform and increased levels of anxiety, depression, and stress. One of the key issues identified is the relationship between TikTok use and procrastination. Many young adults turn to TikTok as a way to avoid tasks or responsibilities, which may initially provide some sense of relief or escape. However, this avoidance behavior often leads to a vicious cycle. As individuals spend more time on the platform, they may experience worsening depressive symptoms, fueled by the guilt or stress of unfinished tasks. This cyclical relationship aligns with broader findings on the psychological consequences of procrastination, where short-term relief from avoiding tasks ultimately leads to mood deterioration. Understanding this cycle is crucial for both mental health professionals and users. It highlights the importance of encouraging healthier digital habits and promoting awareness about the potential mental health impacts of excessive social media use.

Our review highlights patterns of excessive TikTok use, with several studies suggesting a connection between prolonged engagement on the platform and behaviors similar to those seen in addiction. Many users, particularly young adults, report spending considerable amounts of time on TikTok often struggle to limit their use. While direct evidence linking TikTok use to addictive tendencies is limited, individuals predisposed to habitual or compulsive behaviors might be more inclined to engage excessively with the platform. This overlap suggests that excessive TikTok use could be part of a broader tendency to rely on specific behaviors or platforms for immediate relief or distraction. Further understanding of this relationship would be beneficial, as it could help identify groups at risk for developing unhealthy usage patterns. Future research could clarify these connections, potentially guiding the development of targeted strategies to encourage healthier social media habits without pathologizing the platform.

Potential Interventions for Problematic Use of TikTok

It is imperative that educational programs with the primary focus of critical digital literacy development are integrated into schools and local community centers. The programs should create awareness while promoting safer and healthier online habits and educate users about the importance of

identifying signs of problematic social media use and the psychological impacts of excessive use. For example, Notably, China and New York State have implemented regulations that limit children's daily social media usage, offering models that other regions could adapt.⁵⁴⁻⁵⁶ Educating parents about how to effectively monitor screen time and use social media's built-in control tools could empower them to support healthier digital habits for their children.⁵⁴⁻⁵⁶ In addition, studies such as Motta et al⁵⁷ discuss several cost-effective, influencer led initiatives to increase the quality of mental health content quality, that should be adapted more widely. One may also consider the findings from a randomized controlled trial, where it was ascertained that taking a week-long break from social media significantly improves well-being, as well as reduces depression and anxiety levels.⁵⁸

Another helpful approach is encouraging regular breaks from social media, often referred to as "digital detox." Public health campaigns can assist in these digital detoxes by emphasizing the importance of lessening reliance on social media while simultaneously increasing mental wellness. There is an essential need for increased accessibility to mental health resources including counseling centers and support groups, which could provide a safe space for individuals grappling with the psychological effects of social media use. These support groups could serve as safe spaces where individuals can share their experiences and learn coping mechanisms to manage their mental health struggles. There is also a need for regulations within TikTok's design, such as reminders to take breaks after prolonged scrolling, to encourage healthier usage habits. Public health campaigns play a significant role in underscoring the importance of regulating social media use due to its potential adverse psychological effects, such as anxiety, depression, and feelings of isolation. The campaigns should work with a team of media outlets to spread the warning of the detrimental effects associated with TikTok usage. By combining improved mental health resources, app design modifications, and widespread public health messaging, we can better address the challenges posed by excessive social media use and promote healthier digital habits.

Continued research on TikTok's effects on mental health is essential to implement evidence-based interventions. Longitudinal studies are especially needed to understand the long-term consequences of TikTok use. Expanding these interventions could enable more effective approaches to curbing problematic social media use, ultimately supporting healthier digital behaviors across diverse user demographics.

Limitations

The studies discussed must be considered for limitations. One major cause of contention is that the self-reported data

was used, and this could have introduced bias through such channels as social desirability or recall problems, thereby potentially compromising the validity of findings.⁵⁹ For future reference, researchers may consider additional objective measures such as digital tracking data instead of relying on subjective reports only. Another issue is that many of them were cross-sectional in design, and thus do not allow for causal conclusions to be drawn about relationships between variables over time,⁶⁰ thus we need longitudinal research to know more about temporal dynamics between social media usage and psychological well-being.

Their generalizability is also under consideration. Many studies are culturally specific particularly those centered around Chinese samples or certain regional adolescent populations thus necessitating wider cultural contexts so that findings become applicable beyond these specific settings.⁶¹ To increase external validity future research needs larger samples representative enough to be generalizable across different cultures. Longitudinal studies with high dropout rates may have biased results due to non-respondents, therefore the need for more complete follow up data collection in subsequent investigations which would yield better quality information about this topic is recommended.⁶² Moreover, quantitative findings should be integrated together with qualitative ones because most current mixed methods studies tend not to reconcile differences or inconsistencies between them thereby leading into less comprehensive and holistic interpretations concerning TikTok use complexities with mental health consequences.

There have been concerns expressed by parents about the negative impact of new technologies on their children, and every time a new technology is released these anxieties resurface.⁶³ These anxieties can lead to negative biases, and may influence scientific research,^{64,65} even when large scale dataset analysis shows that digital technology may not have that significant of an impact on the lives of children.⁶⁶ TikTok is an immensely popular app that a significant number of children and adolescents use, it is likely that children who suffer from mental illness may also use TikTok, leading to a correlation without causation. For instance, children and adolescents with mental health issues might use TikTok as a form of distraction or social interaction, which could explain the observed correlation. However, this does not mean that TikTok is the cause of their mental health issues. One of the limitations of the existing research is the lack of investigation into dose-response effects. Establishing such a dose-response curve could significantly enhance the understanding of the relationship between social media use and mental health disorders. Future research should focus on testing whether increasing daily exposure to TikTok exacerbates symptoms of anxiety, depression, and other mental health issues.

Another reason that may support this correlation between TikTok use and mental health is that individuals with

increased socio-economic stress or suffering from mental health issues may seek TikTok or other social media to help cope with these symptoms. People with pre-existing conditions like anxiety, depression, or loneliness might turn to TikTok as a form of escape, making it difficult to determine whether the platform worsens these conditions or simply attracts those already struggling. Future studies will need to examine this distinction more closely, using longitudinal designs to track whether excessive TikTok use leads to mental health problems, or if individuals with such issues are more likely to engage with the platform excessively. Seeking mental health is often stigmatizing, and even if one overcomes the internal/external stigma to seek professional help, there is a significant lack of mental health providers and financial barriers that leave these individuals without any support.

Our study observed that a significant section of research papers originated in Asia (68.8%) and specifically in China (45.5%). This concentration raises questions about how applicable the findings are to other regions such as North America. This introduces potential bias due to the geographical distribution of studies. A paper by Dr Pissin titled *The Social Construction of Internet Addiction in China* talks about this in detail.⁶⁷ The paper highlights how in China, societal laws and customs around internet use are more restrictive, particularly for younger users, which may influence the generalizability of the findings. Such regional differences highlight the need to be cautious when extrapolating results to other countries or cultural contexts. Being addicted to the internet was quickly identified as an “issue” as soon as the Internet arrived in China, and reports about Internet addiction were noted to be often driven by moral attitudes and parental attitudes, with metaphors similar to opioid addiction used for internet “addiction.” Also of note is the cultural and political implications of this, with China’s first Internet addiction clinic being set up at the Military General Hospital in Beijing in 2004.⁶⁸ There are concerns about elements of moral panic driving biased research toward internet addiction, with military style camps used to “treat” this “addiction,” causing deaths of several teenagers.⁶⁹⁻⁷¹ Other authors have observed that the Chinese state displays an authoritarian and paternalistic stance toward children, with popular, state-sanctioned, and media-supported belief that video games lead to addiction.⁶⁷ Parental expectations in Southeast Asia demand that children succeed academically, and control of leisure time spent on the internet is perceived as an effective strategy by parents to fulfill these expectations.^{72,73} Given the regional differences in internet use, particularly the unique cultural, political, and parental dynamics in Southeast Asia, further research is necessary to assess whether these findings can be generalized to Western populations, where societal norms, attitudes toward technology, and parental expectations may differ significantly.

Conclusion

This study is a synthesis of research results from 11 062 participants across various countries. It revealed that TikTok use is associated with several mental and behavioral issues, such as anxiety disorders, depression, and increased procrastination. Additionally, this review highlights that factors like age, individual usage patterns, neuroticism, self-control traits, and platform design contribute to problematic TikTok use. However, much of the data relied on participants' self-reports and cross-sectional studies, which do not allow for tracing how social media use evolves over time. Therefore, prospective research with longitudinal designs is needed to gain deeper insights into when and why TikTok use becomes problematic. From a clinical perspective, these results underscore the need for targeted interventions for specific user populations. Equally important is the promotion of digital literacy and responsible engagement with online platforms, particularly among adolescents and young adults whose wellbeing may be impacted by these issues.

The findings presented in this paper should be interpreted in the context of a systematic review of existing literature. The authors did not conduct any original research or firsthand observations; all conclusions are based solely on the synthesis of previously published studies. As such, the insights provided reflect the scope and limitations of the empirical studies reviewed.

Acknowledgments

None.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.



Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical Approval

Not applicable.

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