IUB Journal of Social Sciences
ISSN 2790-6884 (E) & 2790-6876 (P)
DOI: 10.52461/ijoss.v7i2.4465
Vol. 7, No. 2, 2025, Pages: 89-97

Effect of Screen time on Mental Health of Teenagers: A Literature Review

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Keywords:
Anxiety, Depression, Stress, Screen Time, Sleep Disorder

Article History:
Received: October 14, 2025
Revised: December 28, 2025
Available Online: December 31, 2025

a Gold Open Access Journal

ABSTRACT

Adolescent mental health problems, including anxiety, depression, and sleep disturbances, have become increasingly common in recent years. Among various contributing factors, excessive screen time has gained increasing scholarly attention due to its potential association with psychological distress and poor sleep quality. This review aims to synthesize existing literature on the relationship between screen time and mental health problems among adolescents, with particular focus on anxiety, depression, and sleep disorders. Relevant studies were identified through Google Scholar, PubMed, and PsycINFO using keywords such as screen time, anxiety, depression, stress, sleep disorders, and adolescents. A total of 27 studies published between 2017 and 2025 were included. The review focused only on the duration of screen exposure across different digital devices, while screen content was excluded from the analysis. Thematic analysis was used to examine reported patterns, associations, and correlations. The findings indicate a significant association between increased screen time and higher levels of sleep disturbances, anxiety, and depression among adolescents. The review further suggests that female adolescents may be more vulnerable than males. Future research should investigate the underlying mechanisms linking screen time with adolescent depression and related mental health outcomes.

How to cite this paper?
Akmal. A., Akmal. H. & Latif, S. (2025). Effect of Screen time on Mental Health of Teenagers: Literature Review. *IUB Journal of Social Sciences*, *7*(2), 89-97.

1. Introduction

Time spent using any digital or electronic device, including a computer, tablet, smartphone, or television (TV), is commonly referred to as screen time. It is an essential part of contemporary life (Babic et al., 2017). As digital technologies have advanced, daily time spent on screen is on a rise as a result of a global shift toward social networking, remote work, and online education. Screen time has a major impact on mental health outcomes because to the growing reliance on screens for communication, entertainment, and productivity (Gao & Gao, 2024). The media landscape has evolved at an equally dramatic rate due to the quick development of screen-based technology. For instance, television has slowly lost popularity in recent years, despite still being the most commonly admired screen-based device among US adults (Wang et al., 2023). Concurrently, a sudden rise was observed in use of screen based portable devices. The use of internet services and reported to be

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doubled between periods of 2015 to 2017, while the use of apps and web services on tablets climbed by 70% during the same time period, according to recent Nielsen statistics (Nagata et al., 2024). There has been a suggestion that the current rise of health issues relate to mental ability faced by youth is probably result of an increase time spent on screen. Psychological anguish and poor mental health are becoming more widely acknowledged as serious public health issues affecting young peoples, with higher incidence rates in adults than in others. Physical activity improves mood by releasing endorphins, while in-person socializing provides emotional support and strengthens. Social relationships, learning, and cognitive benefits can result from moderate use (2-4 hours per day). Conversely, excessive social media use, and streaming in particular, has been linked to sleep difficulties, anxiety, and depression (Kobashi, 2024). The screen time for current college student range between some five and half to eleven and half hours per day, according to reports from a number of countries, including France, China, South Africa and the United States of America. (Boers, Afzali, Newton, & Conrod, 2019). Mental disorders are widely acknowledged as a significant contributor (14%) to the global burden of disease, with depression being one of the most common mental disorders.

Screen viewing may affect biomarkers of stress, such as daily levels of cortisol and cortisone, which exhibit a clear diurnal pattern, in addition to its effects on mental health. In reaction to stress, the hypothalamus-pituitary-adrenal axis (HPA-axis) controls the release of cortiso. While a higher cortisol awakening response has been linked to higher levels of overall life stress and feelings of sadness and overwhelm the day before, a flatter diurnal cortisol slope has been linked to a number of physical and mental health outcomes, such as obesity, depression, and externalizing symptoms (Laksana & Murti, 2023; Woo, Bong, Choi, & Kim, 2021; Wu et al., 2016). The modern childhood is defined and shaped by gadget use which are the result of rapid technical advancements in era of high-speed Internet, modern flat-panel displays, and mobile computing capability (Zartika & Murti, 2024). For instance, teenagers now spend almost 18.9 hours in a week online, which is almost double the average of 8 hours in 2005. The time spent on these technologies, especially during times of childhood and adolescence, years has raised concerns about a negative impact imparted on both mental and social well-being of them (Silva et al., 2017).

The United States of America had a 31% rise in youth suicide deaths and an increase of 33% of high depressive symptoms among adolescents between time period of 2010 and 2015. Long periods of screen time may also lead to negative health effects, even while smartphones, tablets, and other electronic devices make people's lives easier and offer more options for entertainment and leisure (Lin et al., 2025). Longer screen usage was also linked with increased attention deficit hyperactivity disorder (ADHD) issues and higher psychotic-like experiences (PLEs) in adolescents, according to certain studies (Chau, Bhattacherjee, Senapati, Guillemin, & Chau, 2022).

According to a large-scale survey, persons worldwide reported using screens for more than seven hours every day, which has significantly increased since 2019 and is linked to increased mental discomfort and digital addiction (Camerini, Albanese, & Marciano, 2022). Higher Screen Viewing (SV) is associated with less psycho-social abilities, lower overall and job life satisfaction, increased interpersonal difficulties, an increased need for social support, elevated psychiatric illnesses developed comorbidly, and a risk of suicide become higher (Weatherson et al., 2020). The incidence of depression in adulthood increases by 1.64 and 1.58 times for every hour of screen usage. East Asian nations are more likely than other regions to use cellphones. In 2016, the American Academy of Pediatrics issued updated guidelines for parents on children's media use. These guidelines recommend that children aged 2 to 5 years should be limited to one hour per day of high-quality screen-based programming, while children aged 6 years and older should have consistent limits on the time spent using media and the types of media used. Similarly, the Canadian Paediatric Society released recommendations in 2017, advising that screen time is not recommended for children under 2 years of age and that children aged 2 to 5 years should be limited to less than one hour of screen time per day. Frequent smartphone use has also been associated with sleep difficulties among adolescents (Santos et al., 2023).

Higher socio-economic and educational levels participate in more time spent on screen Among college students, 66% of adults reported to have used screens for more than two hours on

usual weekdays, while 88% reported doing so on weekends. It has been clearly demonstrated that young people (Macrynikola et al., 2024; McAllister et al., 2021; Twenge & Farley, 2021). Many adults now work or study by using computers, and (Screen Time Based Sedentary Behaviour) ST-SB has emerged as a prevalent and significant problem that affects both adults and adolescents. Therefore, it's crucial to comprehend how ST-SB and adult depression risk are related in order to design prevention and intervention measures (Macrynikola et al., 2024).

When viewing gender effect, the Male (33.8%) and female (34.5%) university students had nearly equal percentages of screen use > 2 hours per day. Chinese university students had a 16.3% detection rate of psychiatric symptoms, showing an increased percentage of female students (17.5%) in comparison to their male counterparts (14.7). Chinese university students had showed emotional symptoms, behavioral symptoms, and social adaptation issues of 17.5%, 17.9%, and 14.6%, respectively, for each dimension (Santiago et al., 2022).

Adults who use digital screens had lower self-reported mental health (e.g., higher levels of depression, perceived stress, and bad mood). Based on information from seven longitudinal and twelve cross-sectional studies, a meta-analysis based on systematic review revealed that heavy screen media use was related to a 28% increase in the risks of depression (Khouja et al., 2019)Additionally, another meta-analysis and systematic review of 37 cross-sectional studies revealed a high positive correlation among smartphone users and their anxiety and stress levels (Kim et al., 2020). The possibility of reverse causation, or that recreational screen use is increased as a result of mental health issues, is another significant limitation, even though the results based on observational studies may be impacted by uncontrolled confounding or information bias brought on by the use of self-reported screen use (Wehbe et al., 2022).

Recent studies suggest that sleep disturbance plays a major role in the association between screen time and depression symptoms. Late-night blue light affects melatonin, which disrupts sleep and makes emotion regulation more difficult (Lin et al., 2025). (Herman, Hopman, & Sabiston, 2015). According to Macrynikola et al. (2024), self-control and resilience can be enhanced by online treatment platforms and mindfulness apps, but their use must have a specific goal. A more optimal viewpoint emphasizes that the quality, purpose, and timing of screen use are important considerations, rather than just whether screen time is good or negative (Twenge & Farley, 2021). To improve the quality of your sleep, the American Academy of Sleep Medicine advises avoiding screens for at least 30 to 60 minutes before bed. Furthermore, to lower the risk of mental health issues, the Royal Society for Public Health advises adults to take regular breaks from screens every 30 to 60 minutes (Santos et al., 2023).

In Pakistan, limited literature exists to highlight the link of mental stress on cognitive abilities, emotional regulation and social interactions. Furthermore, research gap also exists to distinguish the beneficial and harmful impact of screen use. Many university students in cities such as Multan report high smartphone dependence and digital tiredness. Academic pressure and social media demands may be part of this pattern. These issues show why understanding screen time and well-being in a specific cultural context is important for tailoring mental health programs to community needs.

In order to promote wellbeing, adolescents must establish their identities and acquire social and life skills (Haapala et al., 2025). It's possible that technology offers chances to tackle these developmental difficulties in a fulfilling manner. For instance, research shows that 38% of teenage guys give their online gaming handles as one of the first things they share with someone, they would like to be friends with, despite the fact that many people may consider gaming to be a socially isolating pastime.

In a similar vein, 83% of teenagers claim that social media helps them feel closer to peers, and about 68% had reported using digital technology to get hold of social support when facing difficult or trying times. Therefore, there is reason to believe that moderate digital participation may not be detrimental and may even promote development. Timing and device-specific variations were also observed. This emphasizes the necessity of more long-term studies to comprehend how SV affects mental health and to direct efforts to support university students' mental health around the world (Li et al., 2022).

McAllister et al. (2021) investigated the relationship between screen media consumption and self-harm and depression. Instead of reporting time diaries from the past, respondents submit time diaries from the present. On weekdays and weekends, they reported screen time. Girls with a history of self-harm and a clinically significant level of depression symptoms are apparent in those individuals who spend more time in a day on social network media and the internet. Early childhood excessive screen use raises the risk of mental health issues like drug use, sexual abuse, and other school-related behaviours.

Furthermore, a number of researches revealed that girls showed high impact by use of social media than boys. College students' mental health and screen usage were examined, and the results indicated that students who used screens more than two hours daily had increased levels of anxiety, depression, and psychopathological symptoms. However, these symptoms were also strongly associated with unrelated variables as age, gender, family economic position, and degree of physical exercise (Wu et al., 2016)

Pan, Zhou, and Shek (2022) investigated the connection between Chinese junior school teenagers' screen use, extracurricular activity levels, and psychological problems. They came to the conclusion that sadness, anxiety, and discontent are impacted by excessively increased screen time usage and lack of physical activity. (Herman et al., 2015)studied in depth the relationship of screen time, physical activity, with self- reported mental health in teenagers of ages of 12 and 17. Adolescents who were physically active reported higher mental and self-reported health than their counterparts who were not as active. Depression levels rose with every extra hour of social media and screen use, and time-varying correlations suggested that these effects are suggested by upward social comparison.

Wu et al. (2016) tracked college students for a full year in order to look into the connection among time spent on screen and mental wellness problems. Anxiety levels rose with increasing screen usage, but psychopathological and depressive symptoms did not change. The study suggested more research to examine the impact of time spent on screen and mental wellness after controlling variables like age, sex, exercise, and household income. In a meta-analysis of eight main studies with 62,352 teenagers, Laksana and Murti (2023) discovered that screen usage of more than two hours per day significantly raised the risk of anxiety (aOR=1.42) and depression (aOR=1.34).

Zartika and Murti (2024) analysed nine cross-sectional studies with 80,981 adolescents and concluded that time spent on screen exceeding 4 hours per day significantly increased the risk of anxiety (aOR=1.50) and depression (aOR=1.68). On the other hand, reduced stress and fewer symptoms of depression were associated with increased levels of physical activity. Increased screen usage time is a predictive parameter of depressive symptoms, with effects depending on age, gender, region, and screen time length, according to a recent meta-analysis comprising of 18 cohort studies involving some 241,398 individuals conducted by (Li et al., 2022).

Wang et al. (2023) examined 20,375 rural Chinese adolescents and observed that more time spent on screen was greatly associated with a rise in behavior related difficulties, while outdoor time was linked to better mental well-being.

The present study aimed to investigate the relationship between daily screen use and their mental well-being. The main objective was to determine the frequency of screen use and its negative outcomes. Moreover, the research aimed to link the use of digital technologies in increased mental or emotional stress and exhaustion with a focus to overcome these mental challenges.

The time spent on mobile devices, televisions, and computers is increasing daily for both academic and recreational purposes. Exposure to screen rays affects individuals differently, but it certainly has an impact on mental well-being. It is important to clarify the impact of screen time on mental well-being. This research aims to outline the mental health issues associated with screen exposure by reviewing existing literature. The objectives of this study are firstly to review the available literature on time spent on screen and resultant impact on mental well-being due to sleep-disorder, anxiety and depression. Secondly, to study impact of screen time on different gender.

2 Methodology

All researches from Google Scholar, PubMed and PsycINFO were searched with the help of keywords Anxiety, Stress, sleep-disorder depression and adolescents. Twenty-Seven researches (from 2017-2025) conducted on teenagers' (13 to 19 years) were studied. This research is focused on use of screen like mobile, computer and TV, the content viewed is excluded from its domain.

3 Thematic Analysis: Gender Differences in the Impact of Time Spent on Screen upon Adolescent Mental Well Being

3.1 Theme 1: Use and Impact of Social Media on Girls' Mental Well Being

Accordingly, many researchers reported that girls are more vulnerable to the negative impacts of time spent on social media than boys. Santos et al. (2023) stressed that social media use is negatively associated with mental health among girls, hence a contribution towards higher depression rates. (McAllister et al., 2021) studied that girls who spend about two to three hours or more on digital media on daily basis had a likeliness of higher incidences depression and self-harm, on the other hand this association was less significant for their male counter parts. It was found by (Twenge & Farley, 2021) that girls showed higher rates of adverse effects of digital social interactions when compared with males. Boers et al. (2019) observed that use of social media has contributed more strongly to depression in female adolescents, hence suggesting a link to upward social comparison—a typical phenomenon prominent among females. Girls showed a greater impact of social media use when experiencing depression and self-harm. Contributing factors are social comparison, cyberbullying and self-imposed pressures to maintain social image.

3.2 Theme 2: Screen Time and Depression: Gender-Specific Associations

Gender differences hit differently how screen time will impact a person's depression levels have been revealed by multiple studies.

- As studied by (Laksana & Murti, 2023) and (Zartika & Murti, 2024), there was a significant correlation between screen time of about two to four hours or more with depression and anxiety.
- A higher odds ratio among girls was reported by (Herman et al., 2015) for poor mental health when there is an excess of screen time usage of more than two hours among girls, when compared with boys of same age.
- Similarly, (Wu et al., 2016) reported a significant change over time in anxiety levels; the female students experience greater fluctuating responses to use of screen time.

Summary: Excessive time spent on screens showed more pronounced depressive and anxiety inducing effects among female adolescents. This impact is maybe due to emotional sensitivity, social dynamics and multi-tasking stress

3.3 Theme 3: Types of Screen Use and Gender Preferences

The analysis revealed that girls and boys are engaged in different type of activities on screen that may result in different mental outcomes.

- It is reported by (Silva et al., 2017) that boys spending more time on television screens showed higher dissatisfaction with body image; on the other hand, girls have a higher impact of digital media, peer pressure and their relationship with teachers.
- (Silva et al., 2017); (McAllister et al., 2021) reported that girls are more engaged in social media activity and internet browsing, while boys tend to use more video gaming apps.
- Similarly, (Twenge & Farley, 2021) emphasized that the role of social media use had more harmful mental effects among common girls, while playing video games had a less strong link to mental health problems

Summary: Social media interaction is common among girls, which leads to higher emotional strain. On the other hand, boys engage more in video gaming, which has fewer negative health impacts but might reduce social satisfaction.

Table 1: Summary of Studies on Screen Time and Adolescent Mental Health

Sr. No.	Year	Author	Research Area	Respondents' Age Group
1	2017	(Babic et al., 2017)	Screen time and adolescent mental health outcomes	Adolescents (12–18 years)
2	2019	(Boers et al., 2019)	Screen time and depression in adolescence	Adolescents (12–17 years)
3	2022	(Camerini et al., 2022)	Screen time, green time, and mental health during COVID-19	Children and adolescents (8–17 years)
4	2022	(Chau et al., 2022)	Screen time and behavioral and mental health difficulties	Early adolescents (11–14 years)
5	2024	(Gao & Gao, 2024)	Screen time and depression risk (meta-analysis)	Adolescents (various samples)
6	2016	(Goldfield et al., 2016).	Screen time and depressive symptoms in obese adolescents	Adolescents (13–18 years)
7	2015	(Herman et al., 2015).	Physical activity, screen time, and mental health	Adolescents (11–20 years)
8	2020	(Kim et al., 2020).	Passive vs. active screen time and mood/anxiety disorders	Adolescents (12–17 years)
9	2019	(Khouja et al., 2019).	Screen time and anxiety/depression	Adolescents (11–18 years)
10	2024	(Kobashi, 2024)	Self-measurement of intraocular pressure device	Adults (clinical sample)
11	2024	(Laksana & Murti, 2023)	Screen time impact on depression and anxiety (meta-analysis)	Adolescents (various samples)
12	2022	(Li et al., 2022)	Screen time and depression risk (meta-analysis)	Adolescents (various samples)
13	2025	(Lin et al., 2025).	Physical activity, sleep, and screen-based behavior	Adolescents (12–18 years)
14	2024	(Macrynikola et al., 2024)	Mindfulness apps and psychological processes	Mixed populations
15	2021	(McAllister et al., 2021)	Screen media use, depression, and self-harm	Adolescents (13–18 years)
16	2024	(Nagata et al., 2024)	Screen time and mental health (ABCD study)	Early adolescents (9–14 years)
17	2022	(Santiago et al., 2022)	Screen time, anxiety, and sleep quality	Adolescents (12–17 years)
18	2023	(Santos et al., 2023)	Screen time and adolescent mental health (systematic review)	Adolescents (various samples)
19	2017	(Silva et al., 2017)	Screen-based sedentary behavior and mental health	Adolescents (14–19 years)
20	2021	(Tang, Werner-Seidler, Torok, Mackinnon, & Christensen, 2021)	Screen time and mental health longitudinal review	Children and adolescents
21	2021	(Twenge & Farley, 2021)	Types of screen time and mental health differences	Adolescents (13–18 years)
22	2023	(Wang et al., 2023)	Screen time, outdoor activity, and academic performance	Adolescents (12–18 years)
23	2020	(Weatherson et al., 2020)	Physical activity, screen time, sleep, and mental health	Youth (11–17 years)
24	2022	(Wehbe et al., 2022)	COVID-19 confinement, screen time, and stress	Adolescents (13–18 years)
25	2021	(Woo et al., 2021)	Smartphone use type and mental health	Adolescents (12–18 years)
26	2016	(Wu et al., 2016)	Screen time and mental health progression	Youth (12–18 years)
27	2024	(Zartika & Murti, 2024)	Screen time, anxiety, and depression (meta-analysis)	Adolescents (various samples)

Table 1 is showing year wise list of research studied for this article. Thematic analysis was conducted by using AI support along with the authors' interpretations and analysis.

3.4 Theme 4: Protective Effect and Risk Factors: Physical Activity and Coping

It showed that physical activity imparts a protective effect, especially in females.

- It was noted by (Weatherson et al., 2020)and (Herman et al., 2015)that physical activity impacted mental health positively among both genders. It was observed that physically inactive girls experience more mental health issues than inactive boys of their age.
- It was also confirmed that physical activity lowered stress and depression among those using more screen time; it is suggested to use gender sensitive interventions.

Summary: Physical activity benefits girls more than boys, which helps buffer the emotional toll due to time spent on screens.

4 Conclusion

This analysis has a clear revelation of the gender-based impact of screen time use on mental health. Social media use impacts girls more negatively than boys, leading to depression, anxiety and self-harm. Boys tend to have lower mental or emotional harm, but they showed less social satisfaction due to excessive use of isolated video gaming. Critical moderators in gender-based outcomes are types of screen activity, duration and physical activity levels.

According to the review literature, there is a predominance of cross-sectional study designs, limiting the record of data at a single point in time. There is a constant correlation between high screen time and poor mental health among adolescents, but with an inherent limitation of temporality- a prerequisite for determining causality. In conclusion, there may be reverse causality in the findings; it is not clear in the findings if increased screen time has contributed to the development of psychological distress or if adolescents were already experiencing symptoms like depression or social anxiety and they use screens as a coping mechanism for social withdrawal. Furthermore, adolescents may underreport or overreport their actual digital engagement, leading to potential bias in recall.

Future research should use longitudinal designs and objective tracking is necessary to clarify the directional nature of these associations.

Current research aims to help policymakers take concrete steps to reduce youth screen exposure. Educationists and curriculum planners should design skill-based curricula that promote physical on-ground activities rather than screen-based activities. The government should also propose and enforce an appropriate age limit for the use of smart screens.

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