



# The Hidden Costs of Digital Connectivity: Adolescent Mental Health in the Digital Age

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In the era of digital advancements, there is a prevalent utilization of mobile devices and other gadgets among teenagers. They typically dedicate around 3-4 hours daily to activities such as messaging, chatting, gaming, and viewing videos. This excessive engagement has led to various mental health challenges among adolescents. While the contemporary digital landscape enhances communication by making it more efficient, rapid, and informative for young people, it simultaneously creates opportunities for misuse and abuse. Consequently, the digital realm exerts both beneficial and detrimental influences on young individuals and their mental well-being. The current study primarily aims to analyze the results from various research conducted by scholars. Nonetheless, the insights from literature reviews are also considered. The current study primarily centers on analyzing the results from various researchers' investigations. However, reviews of the literature indicate detrimental effects on adolescents' mental health; these effects vary depending on usage patterns. Procrastination and passive use tend to be associated with more negative outcomes, while social and active use corresponds with more positive effects. The impact of digital technology is found to be stronger on short-term indicators of hedonic well-being (such as negative feelings) compared to long-term assessments of eudaimonic well-being (like life satisfaction). The adverse effects can lead to socio-emotional and psychological vulnerabilities, including mental health issues. Additionally, behavioural and emotional dysregulation, along with negative experiences such as cyberbullying, are prevalent among this group. Although adolescents are particularly susceptible, the impact is similar for both adolescents and adults. It seems that both low and excessive usage are linked to a decline in well-being, while moderate usage is associated with enhanced well-being. The current study faces numerous limitations: future research should prioritize high-quality studies with large sample sizes, objective assessments of digital technology usage, and experience sampling methods for well-being.

**Keywords:** Adolescence, Youth, Digital World, Digital Media, Mental health, Well-being

## 1. Introduction:

In the 21st century, digital technologies like the Internet of Things, artificial intelligence, big data, blockchain, and 5G networks have become really popular. These technologies are linked together and improve our lives. Digital devices play a key role in the social and entertainment experiences of teenagers. Recently, both scholars and the general public have raised concerns about the growth of digital technology, especially focusing on the use of smartphones and social media. It has been noted that kids start using tech

devices at a very young age, often during kindergarten, and as they grow older, the use of these devices becomes even more common. The shift to new tech gadgets has brought about changes in how they feel and in their habits with these devices. For instance, in the 1970s, children would begin watching TV around the age of four, but now, they start engaging with digital devices when they are just four months old.

The term "Adolescence" refers to the period from puberty to the point of becoming an adult, during which young people are actively forming their identities. Compared to adults, teenagers tend to be more open-minded, more focused on social connections, less agreeable, less careful, more impulsive, and more willing to take risks. They also gain a bigger share of their happiness and life satisfaction from interactions with their peers. During their teenage years, levels of life satisfaction and self-esteem often drop significantly, reaching some of the lowest points. At the same time, media consumption rises and peaks towards the end of adolescence.

Next, digital technology is a broad term that includes many different devices, services, and ways to use them. Today, teenagers spend a lot more time on screens like TVs, smartphones, tablets, and social media than they do in classrooms. The growing use of digital media is causing problems for teenagers, leading to issues like disorganization, disobedience, betrayal, and bullying. Many kids, including tweens aged 8 to 12 and teens aged 13 to 18, report that watching videos on YouTube is their favorite digital activity, followed by Snapchat, TikTok, Instagram, Discord, Facebook, Twitter, Pinterest, and Reddit. On average, teens spend nearly an hour and a half each day on social media. In daily life, most people in Malaysia use apps like WhatsApp, Facebook, TikTok, Instagram, Zoom, and Hangout Meet. Facebook and WhatsApp are the top choices for 80% to 90% of social media activity among teens because they speed up communication and help connect with others quickly. However, too much use of devices like TVs, video games, and computers can harm the physical and mental health of children and teenagers. The negative effects of tech devices, such as promoting violence and aggression, causing sleep issues, instilling fear, fostering antisocial behaviour, leading to eating disorders, contributing to obesity, causing attention issues, and promoting addiction are especially troubling for young people in this digital era.

The extensive adoption of digital tools, particularly social platforms such as Facebook, Twitter, WhatsApp, and mobile devices among young people, along with the time spent on messaging, gaming, and viewing unrelated videos, results in various physical and mental health problems. Because of this overuse and Excessive reliance on digital technology is causing issues for teenagers, such as ADHD, sleep problems, and decreased appetite. Despite these negative effects, it can also motivate young people to enhance their communication skills and knowledge. Therefore, digital technology has both good and bad impacts on the youth. Nevertheless, it is clear that the adverse effects are much stronger than the positive ones. When it comes to the harmful influence of digital technology, things like social media and smartphones can cause mental and physical health problems. On the flip side, it aids in learning and interaction. It is essential to support young individuals in such a way that they capitalize on the positive aspects of digital technology, enabling them to utilize it effectively and benefit as much as possible.

The worrying trend of excessive digital technology use among children and teenagers and its effects on their mental health is highly concerning for psychologists and social scientists today. Research indicates that more than 90% of teens are online daily, with around a third accessing the internet via smartphones. An Indian study revealed that about 75% of adolescents were moderate internet users, although less than

1% met the criteria for internet addiction. While engaging with digital technology can have advantages by improving communication, social bonds, and tech skills, excessive usage can negatively affect mental health and personal growth. Spending long hours on digital platforms, including online activities, television, and gaming, is linked to low school performance, a higher chance of depression, attention issues, ADHD, risks from sharing personal information, and weakened family relationships and friendships, leading to increased feelings of loneliness. These dangers intensify for young people who already have mental health struggles.

The effects of technology on students' mental health are complex, involving both positive and negative aspects. Although technology can enhance education and offer support, excessive dependence on digital devices often results in mental health difficulties.

## **Digital Empowerment: Boosting Teen Potential**

**1. Nurturing Connections** - Well-known messaging apps and social media sites help teenagers connect with each other, promoting friendship and social interaction. These online tools enable teens to keep in touch with their school friends through video calls, group chats, or entertaining Tik Tok videos.

**2. Developing Cognitive Skills for Problem Resolution** -With technology advancing rapidly, teenagers have to tackle new gadgets and apps as they learn how to use them. Their problem-solving skills might involve figuring out how to hook up a new gaming console to a TV or transferring data from one phone to another, or even using Google Maps to find their way around an unfamiliar city. As new apps and technologies continue to emerge, teens can use basic problem-solving skills for each challenge they face, building abilities that will be useful later in everyday life. For instance, when someone has a job in an office, being skilled with technology becomes important.

**3. Tech-Enhanced Education-** The truth is that kids today are learning in ways that adults could not have thought possible when they were younger. Teens are utilizing the Duolingo app for language learning, the Audible app to listen to audiobooks, and the Evernote app for taking notes in class. With smartphone apps, social media, and engaging websites, teens are experiencing a new level of daily routines; as a result, they can quickly adapt to various digital learning tools, which enhances their educational chances.

**4. Engaging Creativity and Digital Articulation-** Beyond just using colored pens and crayons, smartphone apps and interactive sites give teens the chance to share their creative interests on a wider scale. For example, teens can film a musical act for YouTube, create a mood board on Instagram, edit pictures with Canva, or learn a new dance on TikTok and share it online.

## **The Adverse Impact of Digital Technologies on Adolescent Development:**

Here are some negative consequences of using digital technologies-

- Mental Health Issues.
- Physical Activity Reduction.
- Violence and Hostility.
- Online Bullying and Sexting.



- Risky Sexual Behaviour.

## **MENTAL HEALTH ISSUES**

- Loneliness
- Depression and Stress

## **LONELINESS**

Digital technologies, including social media sites like Facebook, Twitter, Snapchat, and Instagram, are meant to connect people. However, they can sometimes cause the opposite effect since many teens spend time on these platforms to share posts, photos, videos, and play games. This may lead to them feeling cut off from their social lives and not spending enough quality time with their family.

## **DEPRESSION AND ANXIETY**

Social media, because of how it works, encourages people to compare themselves to others. It is filled with content that can easily be seen as signs of social success, such as friends, likes, shares, and followers. These indicators can create issues on their own. If young people do not receive enough likes for their posts or notice that someone else has more likes or friends, it may lead them to feel less valuable. Additionally, the difference between reality and what is shown online means that they often only witness a highly edited version of others' lives. This creates the false impression that other people's lives are more exciting, perfect, and interesting than their own, which also includes its fair share of highs, middles, and lows. This kind of negative comparison can result in increased depression and anxiety among young people.

## **PHYSICAL EXERTION**

- Eye strain
- Sleep issues
- Bad posture
- Less physical activity

**II. REVIEW of LITERATURE:** Many studies have looked at the connection between social media and the mental health of young people, showing both positive and negative effects related to their mental well-being and the use of digital media.

**SS Sales • 2021, Adolescents in the Digital Age: Impacts on Mental Health;** the excessive use of technological resources can affect eating habits, sedentary lifestyle, aggressiveness, substance use or abuse, depression, body image distortions, sleep/wake cycle, hyperactivity, self-mutilation and suicidal ideations.

**Candice L Odgers, Michaeline R Jensen, 2020, Mental health of adolescents in the digital era: Facts, worries, and looking Ahead-**Young people are spending more time online and staying connected to each other through digital means. The ownership of mobile devices and usage of social media have reached unmatched levels, leading to worries that this ongoing connection could damage the mental health of young people.

**Linda Charmaraman, Olaide Sode, David Bickham 2020**, The significant changes in internet accessibility, cell phone usage, and social media habits in the last few decades call for a closer look at how this exposure may link to mental health problems during adolescence. This chapter will explain and talk about (1) the current evidence regarding the links between mental health and technology use, including depression, anxiety, body image issues, attention-deficit problems (and risks of being distracted), and addictive behaviours, and (2) how harmful online communities affect the mental health of adolescents, focusing on networks that promote eating disorder behaviours and thoughts of suicide. Suggestions for parents, teachers, and health providers will be included in each part.

**Nesi et al. (2019)** found that 57% of teenagers who were admitted to a hospital mentioned having positive experiences online, such as getting support or encouragement, two weeks before their hospitalization. The percentage of girls receiving support in this way was significantly higher than that of boys (64% compared to 46%).

**Akkin Gurbuz et al. (2017)** found no major difference between the number of depressed and non-depressed young people who interacted online (for example, chatting with friends, reading updates, or making friends online), but the link between the severity of depression symptoms and online activity might be more complicated than it seems.

**McCrae et al. (2017)** examined the strong positive connection between the number of social media platforms and all three negative emotional states: depression, anxiety, suicidal thoughts, and stress.

In a similar way, other research has discovered a link between the times spent scrolling through social media apps and having a poor body image on Facebook. Individuals who dedicated more time to social media had 2.2 times the likelihood of expressing concerns about their eating habits and body image compared to those who engaged less with social media.

**Seabrook and Kern (2016)** investigate the benefits of positive interactions, emotional support, and feelings of connectedness through social networking sites. Conversely, negative interactions and social comparisons on these platforms are associated with increased levels of depression and anxiety.

**Kaur and Bashir (2015)** identified both beneficial and harmful effects of social media on teenagers' mental well-being. The positive aspects included feeling connected, receiving social support, improved communication, and greater awareness. In contrast, the negative effects encompassed feelings of depression, anxiety, exhaustion, online bullying, sexting, emotional suppression, and reduced cognitive abilities.

**Rosen et al. (2013) and Pantic (2014)** discovered that symptoms of depression were significantly present among individuals who spent excessive time engaged in online activities on social networking platforms.

Additionally, findings from various other studies in recent years suggest a relationship between the usage of mobile devices, like laptops and tablets, and musculoskeletal issues in children and teenagers. Using smartphones can lead to issues such as poor joint position sense in bending, reduced activity in neck muscles, and a forward leaning head posture.

A study involving children aged 6 to 17 revealed that those who use technology extensively and partake in less physical exercise are twice as likely to become obese. Despite the crucial role of sleep for healthy growth and development in adolescents, many in this age group experience sleep shortages. A study

indicated that using at least one screen-based device, particularly mobile phones or televisions at night, was linked to negative sleep results, including inadequate sleep duration, a late sleep midpoint, and poor sleep quality in adolescents.

Similarly, research conducted in Singapore showed that headaches are more frequent among smartphone users, and as the time spent talking on the phone increases (over 60 minutes), so does the frequency of headaches, indicating a dose-response relationship. Research indicates that prolonged mobile phone usage can lead to issues like eye strain, irritation, blurred vision, rashes, and double vision.

Moreover, excessive use of digital devices may result in poor posture, musculoskeletal pain, anxiety, depression, and decreased body awareness. On the flip side, studies have indicated that smartphone addiction can clearly be a risk factor for declining academic performance.

**OBJECTIVES:** To analyse the connections between the use of digital technology and its effects on the mental health of adolescents, particularly focusing on levels of depression, anxiety, and loneliness through a systematic review of existing research.

**THE CURRENT STUDY:** Over the last decade, several systematic reviews and meta-analyses have been done on how digital technology can improve mental health in teenagers and young adults. There is a need for a broader examination of these analyses and reviews to see if there is consistent proof of their effectiveness and to look at the common issues with research in this field. Thus, this systematic overview offers a comprehensive summary of the current evidence regarding how digital influences mental health for teens and young adults, specifically those aged 10 to 24 years, as defined by the World Health Organization and similar entities. This includes individuals with diagnosed or self-reported mental health challenges, such as mood disorders, behavioural issues, and trauma-related conditions like anxiety, depression, emotional stress, eating problems, and PTSD. Additionally, this study aims to understand the factors, such as the digital platforms used and their design features that enhance effectiveness and social-emotional wellbeing.

### **III. METHODS:**

We conducted a systematic review of existing literature that looked at Internet technology use among teenagers and its effects on mental health, feelings of connection, and levels of depression, anxiety, and loneliness. We set guidelines for this review to ensure we included all relevant articles, avoiding any selection bias.

**DATABASE SEARCH:** This review followed a specific plan. We performed an electronic search of literature from various databases. The articles we reviewed came from the following online sources: Google Scholar, MEDLINE, PubMed, PsycINFO, Cochrane, CINAHL, ERIC, Psychology and Behavioural Sciences Collection, Science and Technology Collection, and the refined EBSCO Social Sciences database. The initial search was carefully defined in terms of concepts: (adolescent OR adolescence)? (Digital world OR social media)? (Depression OR anxiety OR loneliness OR wellbeing)? The search was restricted to peer-reviewed articles in English published between 2008 and 2024. We used a set of keywords: (digital media, digital technology, cyber bullying, web-based, internet-based, mobile phone,) AND (adolescent, youth, young, child, and student) AND (mental health, socio-emotional wellbeing, wellbeing). Our search focused on overview studies, such as meta-analyses and systematic reviews.

**DATA SYNTHESIS:** We combined evidence from articles discussing the success of digital interventions on mental health outcomes, the therapies used, and the digital platforms utilized. We also looked at factors linked to effectiveness, sustainability of results, completion rates, and adherence. Lastly, we reviewed and combined information on the cost-effectiveness of these findings and their applicability in low- and middle-income countries. Due to the significant differences between the studies, we chose not to perform a statistical analysis.

#### **IV. DISCUSSION:**

The goal of this review was to analyse and compare the digital experiences of teens in relation to their mental health, including significant clinical symptoms like anxiety, depression, eating disorders, or self-harming behaviour. It aimed to determine whether these young individuals are at a higher risk of digital-related harm compared to their overall wellbeing. The review also sought to discover the potential advantages of digital experiences for explore how young people engage with digital experiences and how these relate to their happiness and overall health. The various methods and measures used in the studies reviewed highlight how complex this topic is. It is difficult for researchers because the online world offers many different types of content and interactions, which can affect mental health in various ways. Due to different situations, young people may react differently to similar content or interactions. Many of the studies referenced to use cross-sectional correlation designs. While these studies have helped explain the link between digital experiences and mental health in adolescents, they do not allow for conclusions about cause and effect or the order of events. To understand when the connection formed or how it has changed over time, we need to use longitudinal or experimental research methods.

First, several digital trends, like connecting with friends or looking for a break from studying, seem to be common challenges across various situations. One issue that stands out as unique is self-harm. It seems that online images play a key role in self-harm activities, and some individuals may purposefully search for such harmful content (Jacob et al. , 2017), while others might accidentally find it when looking for uplifting material (Radovic et al. , 2017). Because there are few studies on this, these findings are not definitive and require more exploration.

Second, we could not determine if digital experiences differ for young people struggling with anxiety, depression, eating disorders, or non-suicidal self-injury. The existing literature is too sparse to pinpoint strong patterns that characterize experiences associated with each disorder. There is notably a serious lack of studies that include individuals with diagnosed eating issues. Our research revealed just one such study (Hadwiger et al. 2019). Additionally, there have been insufficient direct comparisons between the various conditions, and indirect comparisons are not viable due to the differing concepts and measures used across studies involving different clinical groups. Lastly, many studies included adolescents with several mental health diagnoses, which may lead to avoidance behaviours and emotional weaknesses, significantly hindering the chance to assess life satisfaction. Consequently, future studies should involve groups with clearly defined mental health issues to guarantee clinically useful results. Furthermore, upcoming research should adopt designs that include both risk factors and opportunities so that we can evaluate the relative risks and opportunities within a single study instead of trying to draw conclusions from various studies.

Third, teenagers facing serious mental health issues might be more at risk for harm from online activities compared to those without these challenges. Many of the studies looked at “problematic use,” which covers various unhealthy digital habits like losing control over their usage and being addicted to the

internet or smartphones. A key observation is that young individuals diagnosed with depression or anxiety tend to struggle more with these unhealthy digital habits and find it harder to manage their online interactions. The research focusing on problematic usage is a valuable starting point for gaining insight into how the digital environment can impact the mental health of teenagers. Nevertheless, we must not categorize internet, social media, or smartphone use as simply one type of activity. Only through solid and detailed research on digital engagement can we improve our understanding.

Fourth, the literature reviewed indicates that digital platforms may offer positive social experiences and instant support from friends and mental health professionals for teens dealing with mental health issues. However, being male and experiencing more severe depression may limit the chances of benefiting from these favourable online interactions. Some online connections might worsen mental health problems and encourage unhealthy behaviours. Besides socializing online, spending time alone with digital content may help some teenagers distract themselves and find temporary relief from their mental struggles. Still, relying on this as a coping mechanism can be harmful and might lead to issues with managing their internet use.

Digital technology has become a part of everyday life for both adults and teenagers, reflecting recent changes in society and culture. However, the rates and ways that adolescents with serious mental health challenges use technology are alarming. Externalizing disorders, along with low self-esteem, create a significant risk for unhealthy technology use. Teenagers with these disorders often have cognitive challenges, such as weak executive functioning and emotional skills, making them more susceptible to the negative effects of digital technology. This is evident as the rates of problematic use among hospitalized adolescents are higher than what has been seen in the broader teenage population. There have been rapid and dramatic shifts in how teenagers allocate their time, connect with others, and communicate, largely due to their access to mobile devices and social media, which have reached all-time highs among this age group. It's not surprising that digital devices appeal more to young people, considering their strong desire for social connections, approval, and new experiences. As adolescents devote more time to engaging with digital technologies, there is a pressing need to comprehend how using technology affects mental health and to utilize new technological advancements in ways that promote well-being rather than harm it. Sadly, much of the research on teenagers' use of digital technology and their mental health has concentrated on the negative aspects and is based on weak correlations. Over the last ten years, the quick rise of social media has raised concerns that these platforms may be leading to serious mental health issues. Research during this time has primarily looked at correlations, often emphasizing adults more than teens, resulting in a mix of small positive, negative, and neutral findings.

Additionally, vulnerable teens, due to their age and mental health challenges, might experience emotional and behavioural issues because of the pressures and demands that come with using digital technology. A deeper investigation into how, why, and in what ways teenagers use technology—and its perceived upsides and downsides—would help clarify the complex relationship between digital technology use and mental health issues. It is crucial to recognize that this relationship can have both good and bad aspects. For instance, staying connected with family and friends through online networks can provide social support and improve emotional regulation. However, being constantly involved with friends who may also struggle with emotional issues could limit exposure to healthier activities and social interactions that would benefit mental health. Moreover, there is often a disagreement between parents and teens regarding what constitutes acceptable digital technology use, which continues to evolve in our increasingly online world.

**CONCLUSIONS:**

The various methods and measures used in the studies reviewed highlight how complex this topic is. It is difficult for researchers because the online world offers many different types of content and interactions, which can affect mental health in various ways. Due to different situations, young people may react differently to similar content or interactions. Many of the studies referenced to use cross-sectional correlation designs. While these studies have helped explain the link between digital experiences and mental health in adolescents, they do not allow for conclusions about cause and effect or the order of events. To understand when the connection formed or how it has changed over time, we need to use longitudinal or experimental research methods.

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