

Longitudinal Associations Between Digital Media Use and ADHD Symptoms in Adults: A Systematic Review

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Abstract. Growing concerns have emerged about how the increasing use of digital media among adults may influence symptoms of attention-deficit/hyperactivity disorder (ADHD). Although previous studies have explored the connection between digital media use and ADHD, many have not adequately addressed questions of causality, particularly within adult populations. This paper systematically reviews longitudinal studies that investigate the relationship between digital media use and ADHD symptoms in adults. The findings suggest that frequent engagement with digital media has been linked to an increase in ADHD symptoms. Specifically, the review identifies a notable and favorable correlation between digital media use, particularly excessive engagement with social media and online gaming, and the presence of ADHD symptoms. Such results point to an ongoing demand for longitudinal studies and stress the significance of designing tailored approaches to govern the use of social media and mobile devices among adults.

Keywords: ADHD, Digital media use, Systematic review, Adults, Addiction

1. Introduction

By the year 2024, close to 60.4% of the global population owns a mobile phone, and individuals are spending increasing amounts of time on their preferred social media platforms [1]. The average figure shows that users spend 2 hours and 24 minutes daily on social media, with global engagement expected to reach a total of 4 trillion hours in the current year [2]. Digital media encompasses various types, including social networking, professional networking, video sharing, blogging, and micro-blogging [3].

Also known as social media addiction, problematic use of social media, is characterized by a compulsive need to check and update platforms. This behavior can interfere with daily functioning and strain real-world relationships [4]. Moreover, attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental condition marked by persistent difficulties in maintaining attention, controlling impulses, and regulating hyperactivity [5,6]. An increasing number of studies have found that problematic social media use is closely linked to a heightened likelihood of ADHD symptoms [7]. An increasing number of studies have found that problematic social media use is closely linked to a heightened likelihood of ADHD symptoms [8]. Moreover, smartphone addiction has been linked to ADHD, which has been recognized as a possible risk factor for its development [9]. Individuals

with trait-level ADHD, especially those with predominantly inattentive symptoms, tend to be more susceptible to technology-related addiction [10].

The surge in digital media use has raised concerns about its impact on ADHD symptomatology. One meta-analysis review has examined this link broadly [11], with others focusing specifically on video gaming [12,13] and ADHD symptoms in individuals diagnosed with Internet gaming disorder [14,15]. Studies have documented that problematic internet use and the inattentive symptoms of ADHD are linked in a bidirectional manner [8].

However, the fast-paced development of digital technologies and evolving user behaviors highlight the need for an updated review that reflects the current state of research. Notably, many previous reviews have overlooked longitudinal designs and adult populations. Longitudinal studies are particularly valuable because they account for baseline symptom levels and can provide insights into causal relationships. Adults, as a major demographic of digital media users, are an essential group for investigating how sustained media engagement may influence the progression of ADHD symptoms. Additionally, the interaction between digital media use and mental health is likely reciprocal. Each may affect the other over time [16]. Unlike cross-sectional designs, longitudinal studies follow the same individuals over extended periods, making it possible to determine whether digital media use precedes the onset of ADHD symptoms or vice versa. The primary aim of this study, therefore, is to perform a systematic synthesis of longitudinal studies examining the association between digital media use and ADHD symptoms in adult populations.

2. Method

A comprehensive and systematic literature search was conducted to identify studies examining the longitudinal associations between digital media use and ADHD symptoms in adults. To ensure broad disciplinary coverage, the search was carried out using Google Scholar. Search terms were carefully constructed to capture a wide range of relevant studies involving digital media use, ADHD, and longitudinal research designs. Key terms included various combinations of: “digital media use,” “social media,” “internet use,” “screen time,” “ADHD,” “attention deficit hyperactivity disorder,” “symptoms,” “longitudinal,” and “adults.”

To guarantee the incorporation of only relevant and high-quality studies, specific inclusion and exclusion criteria were applied. Studies were included if they met the following conditions: (a) examined the longitudinal relationship between digital media use and ADHD symptoms in adult populations; (b) employed a longitudinal design with a follow-up period of at least six months; (c) used quantitative methods such as observational research, surveys, or clinical assessments to evaluate both digital media use and ADHD symptoms; (d) were published in English; and (e) provided clear definitions of both digital media use (e.g., screen time, internet use, social media engagement) and ADHD symptoms (e.g., attention difficulties, hyperactivity, impulsivity). Exclusion criteria were as follows: (a) studies focusing exclusively on children or adolescents; (b) studies utilizing cross-sectional or experimental designs; (c) studies lacking distinct measures of either digital media use or ADHD symptoms; and (d) studies not published in peer-reviewed journals, including conference abstracts, editorials, and opinion pieces. These criteria were systematically applied during the screening of titles, abstracts, and full texts to ensure that the final set of studies was methodologically sound and directly relevant to the review’s objectives.

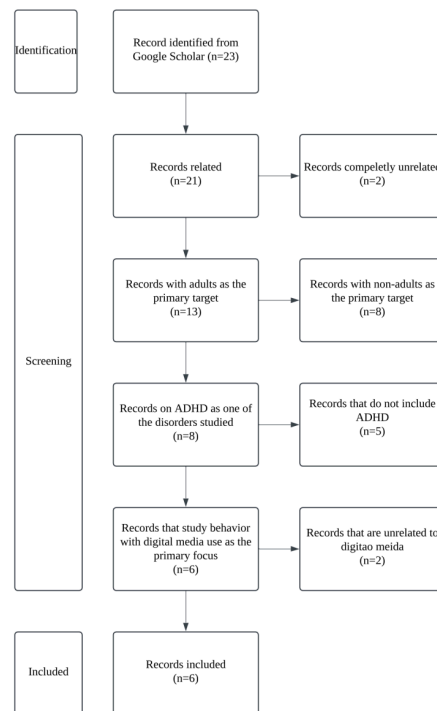


Figure 1. Selection process for included studies

Table 1. Studies included in the systematic review

Study (country)	Age at baseline (time span)	Measure digital media	Measure ADHD symptom levels	Control variables, media- tor, and moderators	Results
USA					There is a direct relationship between ADHD and the problematic use of social media.
Netherlands	Teen ager			Age, Parental ADHD Features, Parenting Practices, and Household Circumstances	Adolescents exhibiting ADHD symptoms often show elevated and problematic engagement with social media.

Table 1.(continued)

USA n=58	13-16 years old	Preferred online activities, frequency of internet use, Facebook interactions, and online risk behaviors	Online behaviors and offline symptoms		Previous research indicates that while adolescents with ADHD engage with technology in patterns comparable to their peers, they face a distinct vulnerability to cyberbullying. Offline vulnerabilities were linked to risky online behaviors. Facebook use, in particular, correlated with both online risks—such as weaker online connections—and offline risks, including reduced social skills and increased internalizing symptoms.
USA n=228	6-12 years old	Diagnostic Interview Schedule for Children, the Swanson, Nolan, and Pelham Rating Scale	24-item self-report questionnaire	Psychological, social, behavioral, cognitive, familial functioning, race	Girls with an initial ADHD diagnosis exhibited a marginally higher amount of overall screen use.
USA n=623	Adult		Conners' Adult ADHD Rating Scale		Hyperfocus in adults with high ADHD symptomology and to present a means for assessing hyperfocus
Turkey n=187	13-19	Barratt Impulsiveness Scale	Bergen Facebook Addiction Scale	Participant Age, School, Parental Demographics, and Family Socioeconomic Indicators	ADHD index scores are the predictors of face book addiction
Japan n=478	18-21	Smartphone Addiction Scale	Young's Internet Addiction Test 25-Item Hikikomori Questionnaire		Participants identified as high-risk for hikikomori based on HQ-25 demonstrated longer internet use and elevated scores on both the IAT and SAS-SV. Correlation analysis indicated a relatively strong association between HQ-25 and IAT scores, whereas the link between HQ-25 and SAS-SV was moderately weak.
USA n=374	13.6-17.2				Despite time limitations during patient visits, both parents and teens place high priority on receiving information from their doctor.
USA n=1787	19-32	Pew Internet Research Questionnaire	Patient-Reported Outcomes Measurement Information System	Gender race	Social media use was significantly associated with increased depression.

Table 1.(continued)

USA n=45 92	12- 17 year s old	The frequency they checked and posted on social media	Patient Health Questionnaire-9 and Screen for Child Anxiety-Related Emotional Disorders	Age, gender, race, household socioeconomic status	Greater social media use correlated with increased severity of depression, anxiety, and loneliness symptoms.
Australia n=46 2	20- 40 year s old	Bergen Social Media Addiction Scale	DASS-21		Cross-sectional findings indicated that social media addiction (SMA) symptoms remained stable over time and, while related to depression, anxiety, and stress, were nonetheless distinct from them. Within the network analysis, tolerance and mood modification emerged as the most central symptoms in terms of expected influence and closeness, respectively. Depression had a weaker formative impact on SMA symptoms compared with anxiety and stress.
USA n=25 87	teen ager	The frequency they use their phones per week	We calculated the total counts of nine inattentive symptoms (range: 0–9) and nine hyperactive–impulsive symptoms (range: 0– 9) that students reported experiencing often or very often.		Their frequent use of digital technology heightens ADHD symptoms
UK n=40 0	18- 70 year s old	Adult ADHD Self-Report Scale (ASRS)	Young's Internet Addiction Test	Gender, education degree	A moderate association was found between higher levels of ADHD symptoms and internet addiction. ADHD symptoms, age, online gaming, and greater time spent online emerged as the strongest predictors of internet addiction scores.
Korea n=53 5	10- 12 year s old	Young's Internet Addiction test	DuPaul's attention deficit hyperactivity disorder (ADHD) rating scale		Significant associations have been found between ADHD symptom severity and extent of internet addiction among children
Lebanon n=46 6	Adults	Social Media Disorder Scale	Adult ADHD Self- Report Scale (ASRS)	Age, sex, education level, marital status, number of kids, and monthly income	Greater problematic social media use was significantly linked to increased likelihood of ADHD.
Romania n=33 3	18- 47 year s old	General Media Habits Questionnaire - Adult Version (modified)	Adult ADHD Self- Report Scale (ASRS)		Results confirmed the negative associations of both adult ADHD and smartphone addiction with overall wellbeing.

Table 1.(continued)

Australia n=607	17-58 years old	Bergen Social Media Addiction Scale	Adult ADHD Self-Report Scale (ASRS)		Social media, like many emerging technologies, tends to be overpathologized.
Israel n=106	Higher-education students				Understanding a digitally displayed text is more challenging for students with ADHD than their peers
USA n=58	13-16 years old	Internet use frequency			Teens with ADHD use technology appeared at unique risk of cyberbullying behaviors.
Norway n=3399	16-74 years old	Young Diagnostic Questionnaire (YDQ)			YDQ scores showed a linear positive relationship with internet use duration and the prevalence of self-reported sleep disorders, depression, and other psychological impairments.
USA n=2513	Adults	Established diagnostic criteria for impulse control disorders, obsessive compulsive disorder, and substance abuse			Potential markers of problematic Internet use seem present in a sizeable proportion of adults.
Korea n=432	18-68 years old	Asking participants how often (1 = never, 5 = always) they engaged in 16 behaviors indicative of problematic use	ADHD Rating Scale (ADHD-RS), Adult ADHD Clinical Diagnostic Scale (ACDS), and Brown ADD Symptom Assessment Scale (BADDS)	Race, age	A direct association was found between ADHD symptoms and multicomputing, with an additional indirect pathway mediated by excessive or problematic mobile phone use.
Egypt n=933	University students	Self-administrated questionnaires made in Google Forms	Adult ADHD Self-Report Scale (ASRS-v1.1)		Viewing reels, statuses, stories, and shorts, along with the total hours spent on social media during the study period, were identified as independent risk factors.

3. Results

3.1. Description of the included articles

Initially, 23 records were identified through a comprehensive literature search on Google Scholar. During the initial screening, 2 records were excluded as they were unrelated to the topic of this review, leaving 21 potentially relevant studies. These were then assessed based on their target population. Of the 21 studies, 13 focused specifically on adults, while 8 examined non-adult populations. Only the studies targeting adults were retained for further review. Next, the 13 adult-focused studies were screened to determine whether ADHD was among the conditions investigated. This led to the exclusion of 5 studies that did not assess ADHD, leaving 8 eligible records. Of these, 4 were further excluded for not examining digital media use, resulting in a final selection of 4 studies for inclusion in this review.

These 4 studies specifically examined the behavioral aspects of digital media use in adults with ADHD. The sample sizes ranged from 187 to 993 participants, and while some studies included individuals as young as 13, all included a substantial number of adults. To assess ADHD symptoms and determine baseline levels, participants completed standardized self-report measures, including the Adult ADHD Self-Report Scale (ASRS), Barratt Impulsiveness Scale, Social Media Disorder Scale, and Bergen Social Media Addiction Scale. In the reviewed studies, digital media encompassed social networking sites (e.g., Facebook, Instagram), interactive media, and online gaming. The studies also controlled for a range of demographic variables, including gender, age, education level, school affiliation, parental age, monthly income, parents' marital status, and number of children.

3.2. Association between digital media use and subsequent ADHD symptom levels

One study identified a significant link between digital media use and later ADHD symptom levels. One study [17] found that frequent viewing of short video reels via mass media was associated with an increased risk of ADHD. The study also noted that longer viewing times—especially on weekends and holidays—were related to a higher likelihood of developing ADHD symptoms.

3.3. ADHD symptom levels in relation to later digital media

Regarding ADHD symptom levels as predictors of subsequent digital media use, three studies reported significant associations. A study [18] found that higher levels of ADHD symptoms significantly predicted Facebook addiction. Similarly, Another study found reported a moderate association between elevated ADHD symptomatology and internet addiction. In this study, the strongest predictors of internet addiction scores were ADHD symptoms, younger age, time spent playing online games, and overall time spent online. Additionally, a study [19] also demonstrated that individuals with ADHD symptoms were more likely to engage in problematic mobile phone use and frequent multicomputing behaviors.

3.4. Overall findings

In this review, five of the six included studies concluded that ADHD is positively associated with digital media use addiction. The remaining study suggested that this relationship may be less substantial than commonly believed and potentially overstated. Furthermore, one study noted that

although ADHD symptoms are positively correlated with digital media use addiction, the causal direction of this association remains uncertain.

4. Discussion

Our findings indicate a significant positive correlation between excessive digital media use and the exacerbation of ADHD symptoms, particularly in the context of social media engagement and online gaming. Additionally, there is some evidence supporting a bidirectional relationship, wherein ADHD symptoms not only predict increased digital media use, but in certain cases, prolonged digital media use may further aggravate ADHD symptoms over time [20]. These findings add to accumulating evidence that digital media use may be an important factor in the onset and progression of ADHD symptoms in adults [17].

However, several important limitations should be noted. First, the small number of studies included in this review limits the generalizability of the findings. The six studies selected employed varying sample sizes and measurement approaches, which may have introduced inconsistencies. Variations in the definitions and measurement instruments for digital media use and ADHD symptoms across studies may have influenced the validity of the findings. Future research should address these limitations by including larger and more diverse samples, and by employing more objective and standardized measures of digital media use and ADHD symptomatology [21].

5. Conclusion

This review provides valuable perspectives on the association between digital media use and ADHD symptoms in adults. However, further research is needed in several key areas to strengthen and expand upon the current findings.

First, future studies should examine potential influencing factors through approaches such as mediation analysis. Some observed associations may weaken or become unclear when additional variables are introduced or when standardized definitions are lacking. Second, rather than focusing solely on total screen time or general digital media addiction, future research should identify which specific types of media use, such as social networking or gaming, are most strongly associated with ADHD symptomatology. Third, there is a need for more long-term studies with larger and more diverse samples to better understand how different forms of digital media, particularly social media, influence the development or persistence of ADHD symptoms. Many existing studies take a broad approach to media use, which may overlook important nuances. Future studies should incorporate a broader range of assessment methods, including clinical interviews and behavioral tracking tools, to reduce the limitations associated with self-report bias and improve measurement accuracy.

In this review, the longitudinal relationship between digital media use and ADHD symptoms in adults was carefully analyzed. The findings consistently demonstrate a strong positive correlation, particularly with excessive use of social media and online gaming. While most studies support this association, some highlight that the direction of causality remains uncertain. These results underscore the increasing importance of continued research into the long-term effects of digital media use, given its growing role in modern life. Future work should investigate specific patterns of media consumption and develop targeted interventions to help mitigate potential risks for individuals experiencing ADHD symptoms.

References

- [1] İlhan, E. (2025). Examination of expert views on gamification application design process: A case of providing face-to-face relationship motivation. *Yeni Medya*, 18, 21–42.
- [2] Howarth, J. (2025, March 12). Social media usage: 2025 stats and trends. *Exploding Topics*.
- [3] Balakrishnan, J., & Griffiths, M. D. (2017). Social media addiction: What is the role of content in YouTube? *Journal of Behavioral Addictions*, 6(3), 364–377.
- [4] Sherer, J. (2024). Problematic social media use. *ScienceDirect*.
- [5] Pellegrino, A., Stasi, A., & Bhatiasavi, V. (2022). Research trends in social media addiction and problematic social media use: A bibliometric analysis. *Frontiers in Psychiatry*, 13, 1017506.
- [6] Mayo Clinic. (2025). ADHD: Symptoms and causes.
- [7] Farchakh, Y., Haddad, C., Sacre, H., Salameh, P., Hallit, R., & Hallit, S. (2022). Association between problematic social media use and attention-deficit/hyperactivity disorder in a sample of Lebanese adults. *The Primary Care Companion for CNS Disorders*, 24(2), Article 39795.
- [8] Halkett, A., & Hinshaw, S. P. (2024). Problematic social Internet use and associations with ADHD symptoms in girls: A longitudinal observational study. *BMC Public Health*, 24(1), Article 2850.
- [9] Kim, S.-G., Park, J.-Y., Kim, H.-T., Pan, Z., Lee, Y., & McIntyre, R. S. (2019). The relationship between smartphone addiction and symptoms of depression, anxiety, and attention-deficit/hyperactivity in South Korean adolescents. *Annals of General Psychiatry*, 18(1), Article 1.
- [10] Aydın, T., Karakose, S., Sevim, V., & Altintas, E. (2023). On the relationship between internet addiction and ADHD symptoms in adults: Does the type of online activity matter? *BMC Public Health*, 25(1), Article 2072.
- [11] Beyens, I., Valkenburg, P. M., & Piotrowski, J. T. (2018). Screen media use and ADHD-related behaviors: Four decades of research. *Proceedings of the National Academy of Sciences*, 115(40), 9875–9881.
- [12] Ferguson, C. J. (2015). The impact of degree of exposure to violent video games, family background, and other factors on youth violence. *ResearchGate*.
- [13] Kuss, D. J., & Griffiths, M. D. (2012). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *International Journal of Environmental Research and Public Health*, 9(9), 3156–3172.
- [14] Ho, R. C. M., Zhang, M. W. B., Tsang, T. Y., Toh, A. H., Pan, F., Lu, Y., Cheng, Y., Yeo, S. N., Ho, C. S. H., & Mak, K. K. (2014). The association between internet addiction and psychiatric co-morbidity: A meta-analysis. *BMC Psychiatry*, 14(1), Article 183.
- [15] Yen, J.-Y., Wang, P.-W., Chen, C.-S., Chen, C.-C., & Ko, C.-H. (2017). Association between Internet gaming disorder and adult attention deficit and hyperactivity disorder and their correlates: Impulsivity and hostility. *Addictive Behaviors*, 64, 308–313.
- [16] Slater, M. D. (2015). Reinforcing spirals model: Conceptualizing the relationship between media content exposure and the development and maintenance of attitudes. *Media Psychology*, 18(3), 370–395.
- [17] Hassan, Mustafa Mohammed, et al. "The association of social media use and other social factors with symptoms of attention-deficit/hyperactivity disorder in Egyptian university students." *BMC psychiatry* 25.1 (2025): 19.
- [18] Panagiotidi, M., & Overton, P. (2018). The relationship between internet addiction, attention deficit hyperactivity symptoms and online activities in adults. *Comprehensive Psychiatry*, 87, 7–11.
- [19] Seo, M., Kim, J.-H., & David, P. (2015). Always connected or always distracted? ADHD symptoms and social assurance explain problematic use of mobile phone and multicomputing. *Journal of Computer-Mediated Communication*, 20(6), 667–681.
- [20] Shanmugasundaram, M., & Tamilarasu, A. (2023). The impact of digital technology, social media, and artificial intelligence on cognitive functions: A review. *Frontiers in Cognition*, 2, Article 1203077.
- [21] von Polier, G. G., Ahlers, E., Volkening, J., Langner, J., Patil, K. R., Eickhoff, S. B., & Langner, D. (2025). Exploring voice as a digital phenotype in adults with ADHD. *Scientific Reports*, 15(1), Article 18076.