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The digital dilemma. Counting the costs of excessive screen time

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Letter to editors

Abstract

The LTE investigates the health-related costs and implications of prolonged screen use, emphasizing the urgent need for intervention. It provides a comprehensive analysis of the detrimental effects of excessive screen exposure on physical and mental health, highlighting increased risks of obesity, sleep disorders, and depression. The study reveals that unmanaged symptoms of excessive screen time led to an estimated $151 billion loss in the US health system, worker well-being, and productivity in 2023. It underscores the importance of adopting healthy digital habits and responsible screen use to mitigate these adverse effects. Additionally, the letter emphasizes the broader economic and health impacts of uncontrolled screen time, which could influence legislative decisions and promote behavioral changes for a healthier digital future.

In our modern era, the ubiquity of screens has revolutionized how we interact with information, entertainment, and each other. From smartphones and tablets to computers and televisions, screens are an integral part of daily life for many individuals, spanning across all age groups. While the benefits of technology and digital devices are undeniable, the consequences of excessive screen time have become increasingly apparent, particularly in the domain of human health. This paper explores the medical implications of prolonged screen exposure, shedding light on the various physiological and psychological effects it can impose on individuals. Furthermore, it investigates the economic impact on our healthcare system. Understanding the financial impacts is important for establishing cost-effective interventions and policies to encourage better screen habits and reduce adverse health outcomes.

Keywords

- digital devices
- human health
- physical health
- mental health
- screen time

Contribution

A – Preparation of the research project
B – Assembly of data
C – Conducting of statistical analysis
D – Interpretation of results
E – Manuscript preparation
F – Literature review
G – Revising the manuscript

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Excessive screen time, as defined by research parameters, encompasses screen viewing for more than 2 hours per day.[1] This threshold serves as a practical benchmark for identifying prolonged screen exposure and evaluating its potential health implications. The detailed breakdown of screen time by age group[2] is shown in Figure 1.

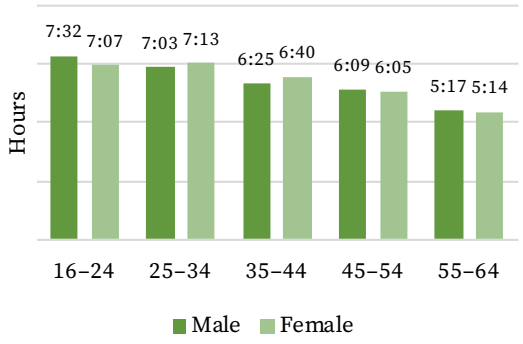

Figure 1. Daily average time spent on screen by age group

Source: Kemp S. Digital 2024: Global Overview Report. DataReportal – Global Digital Insights. https://datareportal.com/reports/digital-2024-global-overview-report. Published January 31, 2024. Accessed August 25, 2024.

Furthermore, it is important to acknowledge the inverse relationship between screen time and physical activity, as documented by research.[3] The latter indirectly increases the vulnerability to obesity and it is predicted by a study that by 2030 51% of the US population will be obese,[4] costing the US economy significant amounts in healthcare expenditures, lost productivity, and increased disability rates. Obesity is expected to increase the economic burden, potentially costing billions of dollars per year in medical costs alone, as well as drastically lost revenue due to decreased labor force participation and staff unavailability. The health implications of increased screen time have profound consequences for the health economics, emphasizing the need for attempts to reduce the adverse impacts on both individual health and the overall economic situation.

Psychologically, extended screen exposure has been associated with the development of mental health disorders including depression, anxiety, and attention-deficit hyperactivity disorder (ADHD).[5] Excessive usage diminishes real-life social interactions, possibly fostering feelings of isolation and loneliness, particularly among adolescents who gravitate towards social media platforms. Moreover, the continual influx of digital stimuli overwhelms cognitive processes, leading to compromised attentional control and exacerbation of ADHD symptoms in susceptible individuals. These psychological challenges have an enormous effect on health economics, leading to expenses for consultations with psychiatrists, psychologists, and other mental health specialists, as well as medication for depression and anxiety. Loss of productivity arises when individuals with mental health conditions are less efficient at work or school, resulting in financial losses for employers and educational institutions. Severe mental health disorders might lead to unemployment, imposing further economic strain on social support systems. Adolescents and young adults with ADHD or other mental health issues may struggle academically, resulting in poor academic performance and decreased future earning potential.

As of January 2024, there are approximately 5.04 billion people using social media representing 62.3% of total global population and 5.35 billion internet users worldwide,[6] but while on one hand technology offers many advantages, it has some downsides as well. The increased usage of screens has given rise to many eye problems like myopia, digital eye strain or computer vision syndrome, as well as psychological disturbances. A report by AOA and Deloitte Economics Institute revealed that more than 104 million Americans of working age spend more than seven hours in front of screens, leading to health consequences which resulted in an estimated $151 billion to the US economy in 2023.[7] This cost accounts for lost productivity, effect on individual wellbeing and financial cost incurred by health systems. The study also found that $1920 could be saved per person with screen time >7 h in productivity and well-being cost by visiting an optometrist once per year and managing their symptoms. Table 1 provides a cost summary of year 2023 that can be avoided if patients visit an optometrist once a year and manage their screen usage.[7]

Table 1. Potential cost savings from optometrist visits in the US in 2023

Cost of unmanaged screen time [$]	151 billion
Cost of managed screen time [$]	90 billion
Net savings [$]	61.1 billion

Source: American Optometric Association. The impact of unmanaged excessive screen time in the United States. Sydney: Deloitte Access Economics; 2024:7. https://www.aoa.org/AOA/Documents/Eye%20Deserve%20More/Cost%20of%20Unmanaged%20Screen%20Time%20Report_FINAL.pdf.

Recent studies show that mental health disorders have a major economic impact on the UK economy. As of 2022, mental health issues cost the UK economy at least £118 billion a year, or approximately 5% of GDP.[8] This cost is mostly due to lost productivity and the responsibilities undertaken by family caregivers, emphasizing the urgent need for preventive measures and effective mental health interventions.

Furthermore, a 2024 analysis by the Centre for Mental Health found that the economic and social costs of bad mental health in England amount to £300 billion per year.[9] This sum includes £110 billion in economic costs related to reduced labor force participation, decreased output, and employee attrition; £130 billion in human costs associated with decreased well-being and quality of life; and £60 billion in health and care expenses.

According to a 2013 report mental health problems cost the UK economy between £70–100 billion per year.[10] Sick leave due to mental health issues accounted for 12.7% of total sick days in UK i.e. approximately 17.6 million days in 2015 and an estimate by Oxford Economics said that UK GDP could be 1.3%, i.e. more than 25 billion pounds higher than it was if not for the economic consequences of mental health problems to individuals and businesses. China, having a population over one billion, experienced a notable economic decline over the last decade due to increasing rates of mental health issues. The national annual cost for mental disorders increased from $21.0 billion in 2005 to $88.8 billion in 2013.

COVID-19 significantly impacted the recreational and work activities, there was decrease in outdoor activities and traveling and people turned tto social media apps to satisfy their unmet social needs. However, these shifts resulted in a significant increase in screen time, which was observed across all ages during the pandemic, and WHO estimated that cases of major depressive disorder increased by 53.2 million (27.6%) globally because of the COVID-19 pandemic. According to a report by WHO, depression will be the leading cause of disease burden by 2030 and studies show that excessive screen time is significantly associated with depression risk. Almost one billion people around the globe suffer from mental illness, and the cost of mental disorders was approximately 2.5 trillion dollars in 2010, a figure that is projected to increase to 6 trillion dollars by 2030.[11]

Economic burden mainly arises from the cost of treatment and loss in productivity and well-being due to mental illnesses. A sedentary lifestyle due to excessive screen time also increases the the risk of obesity and other obesity-related health issues. Use of mobile phones before bedtime can interfere with sleep, leading to poor sleep quality.

To the editor, thus dealing with the above mentioned multifaceted consequences of excessive screen time requires a comprehensive approach involving individual behavior modification and societal intervention. However, achieving this goal necessitates comprehensive measures. It begins with implementing effective education and awareness campaigns that target individuals, families, and communities. Additionally, clear guidelines and recommendations tailored to different age groups should be developed and readily accessible. Promoting parental control tools and cultivating healthy screen habits, such as taking breaks and enhancing digital literacy, are imperative steps. In cases where screen time is unavoidable, such as with online jobs or online classes, adopting proper measures for screen position and posture can help minimize associated risks. When utilizing a computer, it's crucial to configure the setup to minimize eye and back strain. For example, the screen should be an arm's length away, the head should be looking straight ahead and the seat adjusted such that the feet are flat on the ground. Research conducted during the COVID-19 pandemic revealed that children aged 6–15 years who engaged in online classes experienced significant reductions in eye fatigue by following self-relaxing eye exercises and ergonomic advice.[10] Moreover, cultivating good eye habits can effectively mitigate the eye damage resulting from excessive screen time. For instance, incorporating short breaks of five to ten minutes every hour, as recommended by the Health and Safety Executive (HSE),[12] has been shown to reduce health detriments. Additionally, adhering to the 20-20-20 rule, which suggests taking a 20-second break to gaze at an object 20 feet away every 20 minutes, offers further benefits in maintaining eye health and reducing strain.

References

[1] Jain S, Shrivastava S, Mathur A, Pathak D, Pathak A. Prevalence and determinants of excessive screen viewing time in children aged 3–15 years and its effects on physical activity, sleep, eye symptoms and headache. *Int J Environ Res Public Health*. 2023;20(4):3449. doi: 10.3390/ijerph20043449.

[2] Kemp S. Digital 2024: Global Overview Report. DataReportal – Global Digital Insights. https://datareportal.com/reports/digital-2024-global-overview-report. Published January 31, 2024. Accessed August 25, 2024.

[3] Brzęk A, Strauss M, Sanchis-Gomar F, Leischik R. Physical activity, screen time, sedentary and sleeping habits of Polish preschoolers during the COVID-19 pandemic and WHO's recommendations: An observational cohort

study. *Int J Environ Res Public Health*. 2021;18(21):11173. doi: 10.3390/ijerph182111173.

[4] Finkelstein EA, Khavjou OA, Thompson H, et al. Obesity and severe obesity forecasts through 2030. *Am J Prev Med*. 2012;42(6):563-570. doi: 10.1016/j.amepre.2011.10.026.

[5] Nakshine VS, Thute P, Khatib MN, Sarkar B. Increased screen time as a cause of declining physical, psychological health, and sleep patterns: A literary review. *Cureus*. 2022;14(10):e30051. doi: 10.7759/cureus.30051.

[6] Worldwide digital population 2024. Statista. https://www.statista.com/statistics/617136/digital-population-worldwide/. Published August 19, 2024. Accessed August 25, 2024.

[7] American Optometric Association. The impact of unmanaged excessive screen time in the United States. Sydney: Deloitte Access Economics; 2024:7. https://www.aoa.org/AOA/Documents/Eye%20Deserve%20More/Cost%20of%20Unmanaged%20Screen%20Time%20Report_FINAL.pdf.

[8] Mental health problems cost UK economy at least £118 billion a year – new research. London School of Economics and Political Science. https://www.lse.ac.uk/News/Latest-news-from-LSE/2022/c-Mar-22/Mental-health-problems-cost-UK-economy-at-least-118-billion-a-year-new-research. Published March 3, 2022. Accessed August 25, 2024.

[9] Mental ill health costs society £300 billion every year, according to new Centre for Mental Health economic analysis. Centre for Mental Health. https://www.centreformentalhealth.org.uk/news/item/mental-ill-health-costs-society-300-billion-every-year-according-to-new-centre-for-mental-health-economic-analysis/. Published March 27, 2024. Accessed August 25, 2024.

[10] Department of Health and Social Care. Chief Medical Officer annual report 2013: Public mental health. GOV. UK. https://www.gov.uk/government/publications/chief-medical-officer-cmo-annual-report-public-mental-health. Published September 8, 2014. Accessed August 25, 2024.

[11] Health NLG. Mental health matters. *Lancet Glob Health*. 2020;8(11):e1352. doi: 10.1016/s2214-109x(20)30432-0.

[12] Working safely with display screen equipment: Overview. Health and Safety Executive. https://www.hse.gov.uk/msd/dse/. Published 2024. Accessed August 25, 2024.

[13] Wijndaele K, Sharp SJ, Wareham NJ, Brage S. Mortality risk reductions from substituting screen time by discretionary activities. *Med Sci Sports Exerc*. 2017;49(6):1111-1119. doi: 10.1249/mss.0000000000001206.

[14] Alshoaibi Y, Bafil W, Rahim M. The effect of screen use on sleep quality among adolescents in Riyadh, Saudi Arabia. *J Family Med Prim Care*. 2023;12(7):1379-1388. doi: 10.4103/jfmpc.jfmpc_159_23.

[15] New report reveals cost of unmanaged screen time symptoms to be $151 billion per year. American Optometric Association. https://www.aoa.org/about-the-aoa/press-room/press-releases/new-report-reveals-cost-of-unmanaged-screen-time-symptoms-to-be-151-billion-per-year?sso=y. Published January 30, 2024. Accessed August 25, 2024.

[16] Xu J, Wang J, Wimo A, Qiu C. The economic burden of mental disorders in China, 2005–2013: Implications for health policy. *BMC Psychiatry*. 2016;16(1):137. doi: 10.1186/s12888-016-0839-0.

[17] Santomauro DF, Herrera AMM, Shadid J, et al. Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *Lancet*. 2021;398(10312):1700-1712. doi: 10.1016/s0140-6736(21)02143-7.