



International Journal of Advanced Psychiatric Nursing

E-ISSN: 2664-1356
P-ISSN: 2664-1348
www.psychiatricjournal.net
IJAPN 2023; 5(1): 92-96
Received: 08-12-2022
Accepted: 13-01-2023

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Electronic gadget addiction among adolescents: Facts, impacts and measures to give up: A review article

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DOI: <https://doi.org/10.33545/26641348.2023.v5.i1b.115>

Abstract

Children spend a lot of their time on electronic screens, overtime and habitual use of these electronic gadgets which later lead to psychological and physical dependency can lead to addiction later on. Addiction to electronic devices has become a growing habitual problem among children and adolescents. The electronic addiction is wide spread problem among adolescents.

Facts: Some of fascinating facts about electronic gadget addiction among American population are: 1) 26percent of accidents in American are linked with smartphone use. 26% of all car accidents in the US happen as the result of smartphone use. Compare camp reported that, over quarter of car accidents happen in USA is due to smartphone use while driving. Accordance to WHO, people use mobile phone are approximately four times more likely to be involved in accident than not using mobile 2) It show that teens in the US stare at a screen for 7 hours and 22 minutes a day. Younger children aged 8-12 spend an average of 4 hours and 44 minutes a day in front of screens. It is reported that people aged between 8 to 28 years spend 44.5 hours every week on electronic screen are most likely to have an addiction to electronic device. An average of 6 hours and 53 minutes spend on electronic device each day. This means that the world's 5 billion internet users spend a combined total of more than 2 trillion minutes of screen time every single day.

Impacts of Electronic gadget Addiction: Electronic gadget addiction is growing problem in children and society which has marked negative impacts on physical, mental and social health of children immensely. The physical impacts include, Damaged Eyesight, Hearing disturbance, Drastic Brain Development, Obesity, Violence, Radiation Exposure, Sleep Deprivation, the emotions impacts: Damaged Eyesight, Hearing disturbance, Drastic Brain Development, Obesity, Violence, Radiation Exposure, Sleep Deprivation.

Conclusion: It was found that electronic gadget has detrimental impacts on Physical, mental, emotional development of children. Further interventional studies need to be carry out, to ensure abstinence from electronic gadget addiction.

Keywords: Electronic gadget, addiction, adolescents, facts, impacts, measures

Introduction

Technology and electronic devices are an essential component of today's world. They are useful in our daily lives for education, information, communication, and recreation. All age groups, from children and teenagers to adults, find these electronic devices fascinating. Using an electronic device allows one to enter into diverse virtual worlds.

Electronic gadgets have a great impact on children's daily life and activities, more than recreation and communication, the use of electronic gadgets has become a new trend in a stream of education. The online learning platform and accompanying application are clear evidence of the use of electronic gadgets in formal education.

Children spend a lot of their time on electronic screens, overtime and habitual use of these electronic gadgets which later lead to psychological and physical dependency can lead to addiction later on. Addiction to electronic devices has become a growing habitual problem among children and adolescents. It is defined as spending too much time with electronic devices ensuing in habitual obsessive and compulsive indulgence in electronic gadgets which prevents one from relish other spheres of life and fulfilling different needs in life.

Addiction to electronic devices is often compared to addiction to other substances, both of which affect the brain. Like other psychoactive substances and alcohol addiction, addiction to electronic devices is a method of escaping their painful feelings, problems, and boredom. It will be become habitual and difficult to withdraw once its use become excessive. (Dr. Sherry Pottgen:, 2019) ^[4].

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Nir Eyal's Hooked model explains the four factors which involved in addiction of electronic device

1. Boredom acts as an internal trigger, and external notifications add to that.
2. The action is dead simple: open the app or page in the browser.
3. A great variability of rewards is bestowed upon us: photos, comments, likes, gossip, news, emotions, and laughter. The wheel of fortune never disappoints.
4. We invest more and more time and attention into interacting on the platform, which keeps us coming back.

Taken together, these elements are what have caused so many of us to spiral into addiction. The worst part is we do it to ourselves. (Ananth Indrakanti, 2020) ^[1].

Electronic device addiction in teens is a common problem for parents around the world. Countries like USA, Korea, Indonesia, India, etc. have studies with damning and alarming rates of gadget addiction in children and its negative consequences. All parents fear that their child spends a lot of time in front of the electronic screen. About 47% of parents acknowledge that their kids are addicted to technology. According to investigation, kids between the ages of 8 and 18 spend an average of 46:5 hours per week in front of a screen on an electronic device. Even some teenagers spend an average of 9 hours a day in front of an electronic screen. (Basu & Sandhya, 2020) ^[2].

Most children are now learning how to operate the electronic device even before they can walk and even before they start school, according to a survey by the Kaiser Family Foundation that found they spend, on average, almost seven and a half hours per day in front of an electronic screen. Excessive screen time is not just the number of hours spent using an electronic device that is of concern; it is also the long-term negative effects of its use on our children. Excessive use of electronic device is harmful and has been linked to poor psychological wellbeing, disturbed sleep, poor academic performance, poor social skills, decreased reading, and a high rate of obesity. It is also linked with some major psychological issues such as anxiety, depression, mood disorder, substance abuse etc.

Positive correlations between excessive electronic device use and psychiatric comorbidity were found in studies of excessive device use. Effects of electronic devices were more evident than in previous eras. A normal child spends about 8 hours per day in front of a screen, according to the US centers for disease control and prevention. Excessive use of electronic devices can cause detrimental psychological problems like disobedience, social delinquency, lack of sleep, which reduces productivity and increases the risk of attention deficit hyperactivity disorder, as well as physical problems like obesity, myopia, dryness, blurred vision, and headaches. The use of electronic devices such as smartphones, pads, etc. has soared among adolescents over the past two years. The Sense Media study found that use of electronic devices increased exponentially from 38% in 2011 to 72% in 2013. The study also showed that children's exposure to gadgets increased from 10% to 38%. (Holmes, 2021) ^[5].

Our way of life has significantly changed as a result of the COVID-19 pandemic. This pandemic has an equal impact on children. Even before COVID, excessive use of electronic devices was a concern, but it peaked during the

pandemic. Because of classes and work, screen time has increased due to the pandemic, providing people with justification for their actions. Connecting with people has been made easier by social media.

A reason for concern is undoubtedly the use of electronic devices by kids during the COVID lockdown. The results of investigation conducted on this issue by numerous professional organizations around the world are disturbing. 50 percent of children reported withdrawal symptoms, according to the world unplugged project. (I Maria, 2020) ^[6].

The survey carried out online across 30 Indian cities showed that addiction to electronic device during COVID pandemic increased exponentially to three times. The study showed that 65 percent of children became addicted to electronic devices, while 50 percent of them could not stay away from their gadgets for even half an hour. A rise of Nomo-phobia is also seen children. Around 45 percent of children had reported difficulty in sleep, 7 percent children has bedtime anxiety increased by 32 percent. Incidence of uncontrolled anger and tantrums increased by 30 percent (Urvashi Dev Rawal, 2020) ^[9].

According to the facts reported in the Journal of International Child Neurology Associations, electronic screen addiction syndrome has become a new challenge in pediatric neurology. The WHO recently categorized gaming disorder as a mental health condition and brought the problem to light.

According to neurologist Dr. Sujit kumar has reported that 8 to 12 percent of children and adults have screen dependent disorder in India and expected to rise exponentially in coming years. Screen dependent syndrome is not only effects the psychological status but also effects CNS. Further it is reported that there is absolute decrease in the size of both grey matter and white matter of the brain. This implies that for a child's still developing brain, having Screen dependent disorder can produce the long term impacts and even brain damage may happen. Constantly depending on smartphones or computers to keep their children occupied can have a negative impact on their growth and development of their brain,

In other study published in ASEAN journal of Psychiatry titled exploration of technology use pattern among teenagers and its relationship with psychological variables, Dr. Sharma says adolescents use the electronic gadget for gratification, which comprises self-development, wider exposure, relaxation, globalexposure etc. (Yasmeen, 2018) ^[10].

The electronic addiction is wide spread problem among adolescents. Some of fascinating facts about electronic gadget addiction among American population are

- About 8-10percent of American population addicted to internet, as per PSYCOM,
- 85 percent American adults cannot spent a day without going online, Internet addiction statistics also show that 48% go online several times a day, and 8% do so a few times a week. Just 7% of Americans don't use the internet at all, reported in pew research centre.
- 26percent of accidents in American are linked with smartphone use. 26% of all car accidents in the US happen as the result of smartphone use. Compare camp reported that, over quarter of car accidents happen in USA is due to smartphone use while driving. Accordance to WHO, people use mobile phone are

approximately four times more likely to be involved in accident than not using mobile

- 12 Percent of adolescents are addicted to gaming. A Newport American academy discovered that 97 percent of boys and 83 percent of girls play at least one video game on at least one electronic device. 12 percent of adolescents feel they are addicted with video games. Another survey conducted by healthy gamer showed that 10 percent of children in Singapore and 14 percent adolescents in Hong Kong are addicted to technology and gaming. Over 6 lakh children in South Korea having at least one form of gaming disorder. Researcher also believed that around 1 percent of world population is addicted to gaming. Technology statistics show that video gamers play 8 hours and 27 minutes a week, on average. A over 25 percent of adolescents spends at least 12 hours a week playing games, while 44% dedicate more than 7 hours. That gaming is currently on an upwards trend, and this is especially the case since the start of the COVID-19 pandemic. Binge gaming increased by 13% in 2021.
- 50 percent of adolescents are addicted to smartphone, the common sense media reported that the 78 percent of adolescents check their mobile every hour. 72 Percent adolescents urge to reply immediately to notification they receive, 45 percent of adolescents use the phone all time. 59 Percent of American parent think their children are addicted to mobile.
- It show that teens in the US stare at a screen for 7 hours and 22 minutes a day. Younger children aged 8-12 spend an average of 4 hours and 44 minutes a day in front of screens. It is reported that people aged between 8 to 28 years spend 44.5 hours every week on electronic screen are most likely to have an addiction to electronic device. An average of 6 hours and 53 minutes spend on electronic device each day. This means that the world's 5 billion internet users spend a combined total of more than 2 trillion minutes of screen time every single day. (Milan Chutake, 2020) [7].

Electronic gadget addiction is growing problem in children and society which has marked negative impacts on physical, mental and social health of children immensely. Electronic device addiction can encompass a variety of impulse-control problems, including:

Impacts on Physical Health

- a. **Damaged Eyesight:** Children are largely attracted towards electronic gadget from very early age. COVID has made it compulsion in terms of online education total screen exposure time of children exponentially increased. Excessive exposure to the screen time may have large risk of sever issues related to vision. The national eye institute has found that the frequency of myopia has increased largely in recent years. Other effects of eyes was reduction blinking rate of eye leads to increase risk foe dryness of eye.in sever case blindness may can also occur.
- b. **Hearing disturbance:** Using the loud music has detrimental impact on hearing ability. The national institute of deafness and other communication disorders showed that about 15percent of American of age group of 20-35 years has reduced capability to hear high frequency sound. Other negative effects on physical

health from excessive gadget usage include lack of sleep and increased weight of spine as the head tilt increases to view the screen.

- c. **Drastic Brain Development:** During developmental age the brain triples in size and continues to develops till adult age investigation have reported that excessive use of electronic gadget effects the children's brain functioning and resulting in many problems such as attention deficit, cognitive deficit, impaired learning, increased impulsivity and in ability to control the volitions.
- d. **Obesity:** Children those spending excessive time on electronic gadget rather playing outside in the playgrounds do not burn the calories, hence the obesity, fatigueless is commonly seen in the children now days, which may lead to serious complications such as diabetes, heart attack, stroke in very young age. (Holmes, 2021) [5].
- e. **Violence:** Children spending excessive time on electronic gadget are learn to aggressive due influence of games, videos etc. Tantrum is most common form of aggressiveness among toddler. In older children excessive screen may cause the sever aggressiveness, defying authorities, violence, antisocial behaviour, juvenile delinquency etc.
- f. **Radiation Exposure:** According WHO report in 2011, cell phones and other electronic device are considered category 2B risk because of their radiation emission, Dr. Anthony Miller from the University of Toronto's School of Public Health in 2013 revealed that radio frequency exposure is clearly a threat to children. Healthy Child Healthy World acknowledges this rising radiation issue among children and gives tips on protecting your child from these harmful gadgets. (Holmes, 2021) [5].
- g. **Sleep Deprivation:** Children addicted to playing on their electronic gadget miss out on required rest, playing on their electronic gadget becomes their sleeping pill. Without it they become grumpy and violent. Excessive electronic screen time effects sleeping pattern in children, may result in sleep deprivation, insomnia, bruxism etc.

Impacts on Mental and Emotional Health

Dopamine is a neurotransmitter mainly regulate the pleasure and reward centre of the brain. High levels of dopamine are usually associated with motivation and excitement to fulfil goals that would lead to recognized rewards and thus reinforcement of a sense of pleasure while achieving those goals. Procrastination, lack of enthusiasm and self-confidence, and boredom are linked to low levels of dopamine.

Research has shown that the brain gets "rewired" as excessive amounts of dopamine get released in the body on frequent interaction with a rewarding stimulus, i.e., using an electronic device. Boredom triggers an interaction with the rewarding stimulus (electronic device), which in turn results in wide variety of rewards in the form of likes, messages, photos, etc. causing high releases of dopamine in the body. Frequent cycles such as these cause the brain's receptors to become more insensitive to dopamine, causing the body to experience less pleasure than before for the same natural reward. This leads the person down a spiral, where one has increased craving for the same reward to achieve normal

levels of pleasure. If the increased craving cannot be satisfied, it would lead to anxiety, lack of motivation and depression. Gadget addiction is likened to addiction to alcohol or drugs since it results in similar negative consequences. (Ananth Indrakanti, 2020) [1].

Studies have shown that children's cognitive and emotional development can be adversely impacted by electronic gadget addiction. More screen time means more virtual interactions and rewards through use of electronic devices and less face time. Less face-to-face interaction with other people results in lack of empathy for fellow human beings. As social media glorify picture-perfect lives and well-toned physiques, children's self-esteem and self-confidence are eroded. Lack of focus and more distraction during conversations is another expected negative impact. A study on China high school students. Demonstrated that children with moderate to severe risk of internet addiction are more than twice as likely to develop depressive symptoms as addiction-free counterparts.

- **Virtual Relationships:** Addiction to social networking, dating apps, texting, and messaging can extend to the point where virtual, online friends become more important than real-life relationships. Compulsive web surfing, watching videos, playing games, or checking news feeds can lead to lower productivity at work or school and isolate adolescents for hours at a time. Compulsive use of the Internet and smartphone apps can cause you to neglect other aspects of life, from real-world relationships to hobbies and social pursuits.
- **Increasing loneliness and depression:** While it may seem that losing online will temporarily make feelings such as loneliness, depression, and boredom evaporate into thin air, it can actually make feel even worse. A 2014 study found a correlation between high social media usage and depression and anxiety. Users, especially teens, tend to compare themselves unfavorably with their peers on social media, promoting feelings of loneliness and depression.
- **Anxiety:** One researcher found that the mere presence of a phone in a work place tends to make people more anxious and perform poorly on given tasks. The more a people phone use, the greater the anxiety they experienced.
- **Stress:** Using an electronic device for work often means work become enter into individual's personal life. The pressure to always be on, never out of touch from work. This need to continually check and respond to email can contribute to higher stress levels and even burnout.
- **Exacerbating attention deficit disorders:** The constant stream of messages and information from a smartphone can overwhelm the brain and make it impossible to focus attention on any one thing for more than a few minutes without feeling compelled to move on to something else.
- **Diminishing your ability to concentrate and think deeply or creatively:** The persistent buzz, ping or beep of electronic device can distract from important tasks, slow your work, and interrupt those quiet moments that are so crucial to creativity and problem solving. Instead of ever being alone with our thoughts, we're now always online and connected.
- **Disturbing Sleep:** Excessive smartphone use can disrupt your sleep, which can have a serious impact on

your overall mental health. It can impact your memory, affect your ability to think clearly, and reduce your cognitive and learning skills. (Robinson, 2021) [8].

Methods to give up the electronic gadget addiction

1. **Set a discipline:** Initially start with a practice of detoxifying own electronic gadgets by leaving the phone or any electronic gadget for few hours every. Utilise the time with family and friends' children are taught same thing so that children can experience the fun without electronic device around.
2. **Plan daily routine:** Plan the daily routine engage in hobbies and involve in activities that do not need any electronic gadgets. Children are encouraged to involved extracurricular activities which does not required any gadgets. Make sure that, the leisure time is of children should not be equivalent to the screen time.
3. **Encourage the traditional ways of learning:** Most of children have trouble in reading and writing as they largely exposed to learning from online, use of learning apps etc. since COVID pandemic emerged. Children must be encouraged to read the book and explore the answer in non-digital method.
4. **Encourage going outdoor:** Excessive use of electronic device, investing mush time on electronic screen and imposition of COVID restrict have made us to spend much time inside the home in fact it has made self-imprisonment, it is continued even after the restricts are taken off. Motivate the children to go out and play with friends or children can enrol in any sport related coaching classes to outdoor activities.
5. **Reward system:** Restrict the screen time and enforce strict daily routine, children must encouraged for electronic gadget free living by inculcating traditional methods of living, engaging in outdoor activities. Children must give reward for not using the electronic gadgets and following formulated measure (Basu, 2019) [3].

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article

Gundagi T, Krishnan RR. Electronic gadget addiction among adolescents: Facts, impacts and measures to give up: A review article. National Journal of Clinical Orthopaedics. 2023;5(1):92-96.

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