

Eye complications in children due to excessive use of electronic gadgets

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ABSTRACT

Introduction: Twenty-first century is a period of equipment, and every now and then, more state-of-the-art electronic devices are brought into the market. The relative time spent on personal computer (PC) and diverse gadgets has extended rapidly consistently. Sweeping use of electronic gadgets causes many health and mental issues. The main aim of this study is to find the prevailing eye complication among children due to excessive usage of electronic gadgets. **Materials and Methods:** The survey was taken among 100 children by distributing questionnaires, and their daily habit of using electronic gadgets and the effects caused physically and mentally were observed. **Results:** It has been known for some time that exposure to blue light, which is emitted in abundant amounts by electronics such as televisions and smartphones, can tell your body to stop generating melatonin. Melatonin is the chemical that tells your body that it is time to sleep. Hence, less secretion of melatonin hormone leads to lack of sleep which is the main cause for dark circles in children at this early age. **Conclusion:** From our survey, we found that children are more prone to use mobile phone per day than any other electronic gadgets. Children who use smartphones for a longer period of time are exposed to eye damage. The blue light exposure may lead to macular degeneration and a point may come where the eye cannot see real colors properly. This condition can be treated and prevented with regular screen breaks and exercises. Children are advised to wear protective glasses, reduce brightness of the electronic devices, and avoid small screen phones.

KEY WORDS: Affects sleep, Electronic gadgets, Eye complications, Time spent

INTRODUCTION

Twenty-first century is a period of equipment, and every now and then, more state-of-the-art electronic devices are brought into the market. The relative time spent on PCs and diverse gadgets has extended rapidly consistently. Prolonged usage of electronic gadgets leads to significant dependence and this may leads to new different restorative physical and mental issues. PC vision issue (computer vision syndrome [CVS]) results from the deferred use of PCs. Transcendence of CVS ranges from 64% to 90% among PC customers. It is described as a group of vision related problems and the level of discomfort may increase with time expenditure on the PCs. In order to avoid CVS, everyone should educate how to overcome digital eye strain.^[2] The essential visual appearances are eye strain,

dryness, unsettling influence, expending sensation, redness, clouded vision, and two-fold vision. The present-day contraptions and development have ended up being predominant determinants of monetary status and not only is restricted to youths anyway but also is spreading speedy transversely over ages.^[3] Reliance on development is causing colossal loss of productivity similarly as issues in social associations. It has been suggested that, rather than an alternate substance, web obsession is an appearance of a combination of despairing, anxiety, drive control issue, or psychotic wagering.^[4] There have been rehabilitative measures to address web misuse. Technophobia is the fear or abhorrence of present-day advancement, particularly PCs. Even though aware of the potential danger of technophobia, people are still continuing in framing new advanced technology. The time of today needs to push forward with splendid vision and better tomorrow. In the present time frame, the introduction of the current inventive gadgets has gotten the thought of overall masses.^[5] The dependence of people on

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these mechanical gadgets and organizations given by these has come to at such a measurement that, without these, they cannot think a phase forward toward their improvement. The dimension of dependence is inciting impulse of the Technological contraptions and organizations. Youth is the most exposed assembling among the people to be reliant on development.^[5] The examination was an arrangement to investigate the use of tech-contraptions by youth, i.e., the time proceeded with the gadgets, their emotional maturity, and reasoning. Children with myopia feel difficulties in overview composing board in school; they evade outside activities and get kept from the friend social occasions. Untreated astigmatism may incite macular degeneration, glaucoma, cataract, and retinal division. Thus, this examination was finished.^[6] The purpose of this examination is to identify the vision problems among school children. Throughout the world, usage of phones and gadgets becoming advanced in numbers. Mobile is becoming important one to communicate with the other people. Mobile phones have transformed into a regularly expanding number of in all cases strategies for communication.^[7] They have transformed into a bit of customary everyday presence with a creating number of people getting a charge out of the organization and extra open door they give. Electronic gadgets extends its usage by sending mail, voice call, fax and so on Mobile phones are low power radiodevices that transmit and get radio repeat radiation at frequencies in the microwave extent of 900–1800 MHz.^[5,8]

MATERIALS AND METHODS

This was survey based; only the survey was conducted with the help of a questionnaire. The responses were collected through SurveyPlanet. The sample size of this study was 100. The population under the study was in the age group of 10–17. The questionnaire includes the factors such as whether they use which type of gadgets they use the most, how much time they spend in each gadget, and whether they have developed any eye complication due to the excessive use of these electronic gadgets. Each question was given suitable options and they were asked to respond, and the responses were collected. The data which were collected were analyzed statistically using SPSS software.

RESULTS

Children with smartphone addiction show physical and mental illness. It also causes changes in interactions with people. Based on the survey conducted, we conclude that majority of the teens are addicted toward the technology. It was found that about 65% of the children are addicted to smartphones.^[9] When a question was asked that how much time do children

spend in each of the gadgets, it is shown that they spend majority of their time in mobile phones which is about that 35% [Figure 1] of them spend 4–5 h [Figure 2], about 27% spend 2–4 h, about 25% spend 5–10 h, and only about 11% of the children spend only 2 h/day which clearly shows the 21st century technology and social media addiction of children.^[10]

A question was asked how often children spend their time in television, ipad, and computers, and the results were observed. It was found that children spend only very less time in all these types of gadgets which shows that only 7% of children spend about 5–10 h a day in television and about 57% spend only <2 h/day. About 9% of the children spend 5–10 h and about 68% spend only <2 h/day. It also shows that only about 11% of the children spend 5–10 h a day.^[11] This clearly projects the huge replacement of smartphones in place of other gadgets among the children of this generation [Figure 2].

The next question which was put forth in this survey was the most important one which puts to our vision the most common eye complications caused in children due to the excessive use of electronic gadgets.^[12] From

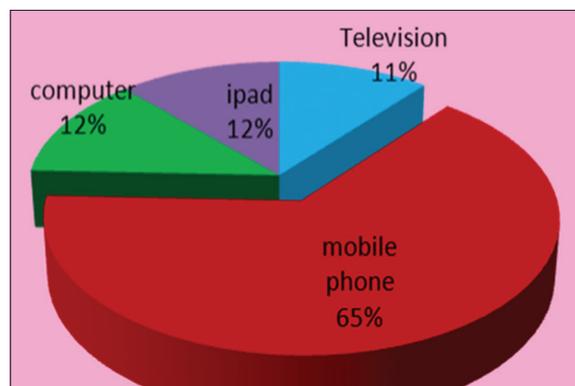


Figure 1: Number of hours spent by children in each electronic gadget

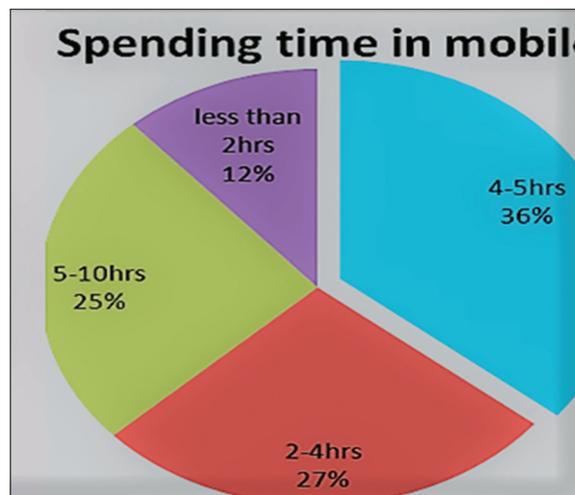


Figure 2: Time spent by children in using mobile phones

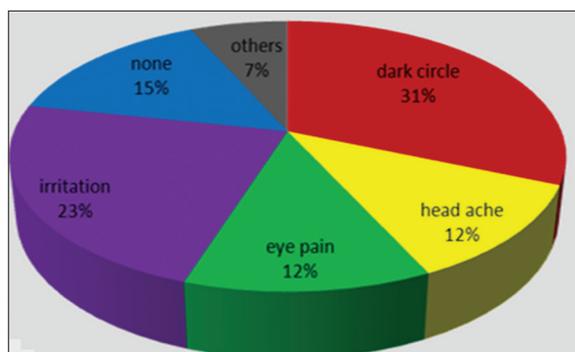


Figure 3: Eye problems faced by children

Children wearing spectacles	50%
Eye complications	43%

Figure 4: Population of children with eye complication and population of children wearing spectacles

the results, we observe that dark circle is the most common problem caused in children which is about 31% [Figure 3].

In figure 4, about 50% of the children wearing spectacles and 45% were having eye complications. [Figure 4].

DISCUSSION

As we all know, the main cause of using smartphones, especially at night, is dark circles due to the blue light which directly enters the eyes at night before sleep.^[13] Light has a profound effect on sleep. Exposure to light early in the day stimulates the body and mind, encouraging feelings of wakefulness, alertness, and energy. Light exposure at night also stimulates alertness and that can pose a serious problem for healthy, abundant, refreshing sleep. The color wavelength for blue is 455–492 nm. Blue light syndrome is a syndrome in which the blue light directly enters the eyes, and it has been known for some time that exposure to blue light, which is emitted in abundant amounts by electronics such as televisions and smartphones, can tell your body to stop generating melatonin. Melatonin^[14] is the chemical that tells your body that it is time to sleep. Hence, less secretion of melatonin hormone leads to lack of sleep which is the main cause for dark circles in children at this early age.^[15,16]

These eye complications can be corrected by following some efficient measures such as:

- Using blue light protective glasses.
- Reducing the brightness of the gadgets, especially during night time.
- Using large-screen electronic gadgets.
- Placing the mobile phones at a protective distance.

CONCLUSION

From the above survey, we conclude that most of the present generation children are addicted toward the technology. Advantaging in technology is advantageous in one aspect but at the very same time as per the saying “Too much of anything is good for nothing” addiction toward the technology will cause various eye complications and affect their physical and mental health. Hence, it is very much essential to bring the children of the current generation from their addiction toward the E-tech world. The recovery from addiction involves counseling them about the effects over usage of electronic gadgets and how it affects their eyes and mental and physical health by parents as well as the teachers.

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