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Original Article

Effect of Electronic Gadgets on the Behaviour, Academic Performance and Overall Health of School Going Children- A Descriptive Study

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ABSTRACT
Background: Electronic gadgets and media have become an inadvertent part of our lives in today's era. Growth in mobile phone density has increased exponentially since the last 5 years.The adolescent populationhas seen a very significant increase in the mobile-phone usage, mainly because this gadget acquires much greater relevance in adolescence than it does in other developmental stages.Hence, the present study was carried out to find out the effect of the usage of electronic gadgets in the overall behaviour, academic performance and health of the school going children. **Method:** The sample size consisted of 240 students from age group 12 to 16 years. A questionnaire survey was conducted among these students at a government high school, Mangalore, Karnataka.The questionnaire assessed the overzealous use of electronic gadgets and their effects on children's behaviour, academic performance and overall health. **Results:** After the descriptive analysis of the data, it was found that 69% of the students like to use gadgets at night before sleeping of which 59% of the children complained of frequent headaches in the morning along with some difficulty in seeing the blackboard from back benches. 53% of the children had difficulty in concentrating during classes or at home while studying, hence reporting an overall fall in their grades. **CONCLUSION:** Although use of electronic gadgets is not the sole leading cause to health problems, they do contribute significantly to a variety of mental and physical health disorders: obesity, sleep disorders, ophthalmic disorders, aggressive behaviour etc.
Key words: Academic Performance, child behavior, electronic Gadgets.

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INTRODUCTION:

Electronic gadgets and media have become an inadvertent part of our life in today's era. Growth in mobile phone density has increased exponentially since the last 5 years.[1]Almost everyone is equipped with some or the other form of electronic gadgets. One of the groups in which the increase in mobile-phone use has been the most significant is adolescents, not only because virtually all adolescents have one of these devices but also because the mobile phone acquires much greater relevance in adolescence than it does in other developmental stages (namely youth, adulthood, or older age). It is surprising to note that in this short span of time, a large amount of literature has been written on the use of mobile phones and its effects on children and adolescents.[1,2]Such is an impact of these gadgets on children. Television and other social media represent one of the important influences on the overall health and behaviour of children and adolescents.

A cigarette in the hands of a Hollywood star onscreen is a gun aimed at a 12- or 14-year-old.
- Screenwriter Joe Eszterhas

According to Young, teens are particularly vulnerable to technology addiction. Teens have poor coping mechanisms. When they face stress, they often chose what is comforting to them, usually something easy to focus on such as online videos or social media sites. Also in the teen years, self identity is uncertain. Most teens struggle to understand how to present themselves and by the mean time technology help them in doing so. Apart from these, the overzealous use of electronic gadgets have a major impact on the lifestyle of the individual. As, adolescence is the major formative years of life, social

media and gadgets might affect the health greatly. Studies prove that the use of electronic gadgets in early childhood ages, results in Attention Deficit Hyperactivity Disorder (ADHD) in children. Obesity and increase in dental caries has also become one of the most common problems among the children and teens these days.[3]

Hence, owing to the above mentioned facts, the present study was carried out to find out the effect of the use of electronic gadgets in the overall behaviour, academic performance and health of the school going children.

MATERIAL AND METHODS:

The sample size consisted of 240 Students from age group 12 to 16 years of age. A questionnaire survey was conducted among the students of 6th to 10th grade in a government high school, Mangalore, Karnataka with the permission of school authorities.

A close-ended questionnaire associated with the overzealous use of electronic gadgets and their effects on children's behaviour, academic performance and overall health was prepared.

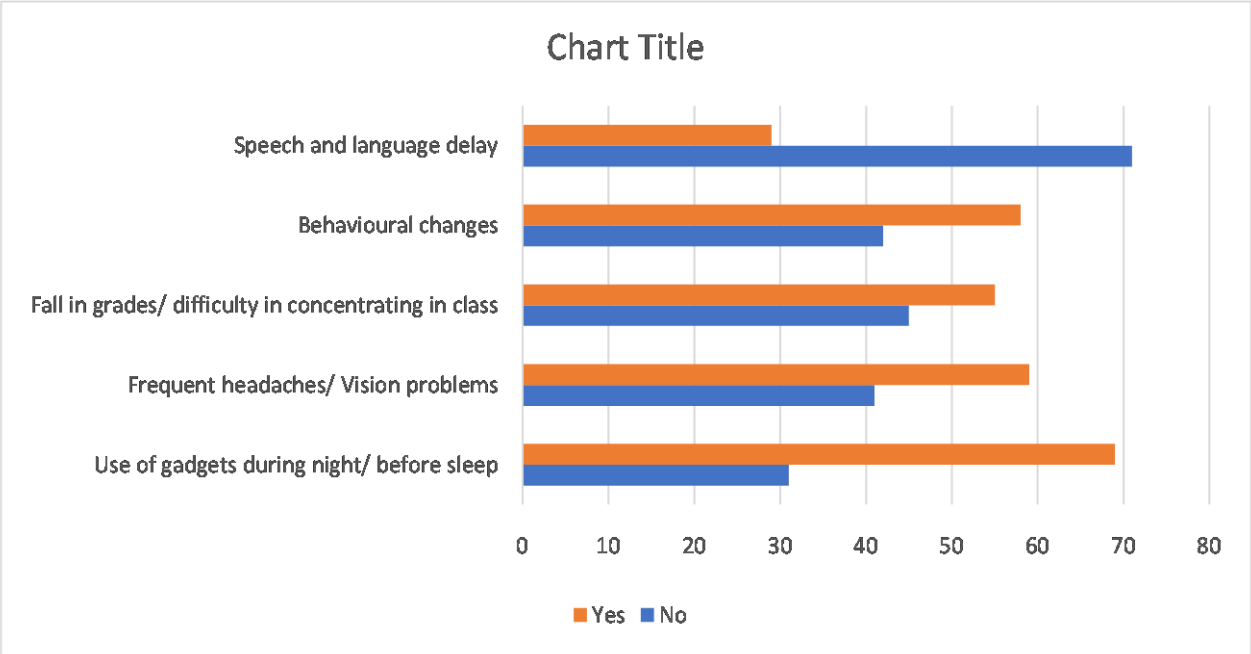
The questionnaire were handed over to the parents of students, during their PTM meetings by their class teachers respectively. The methods and objectives of the study were explained and were requested to determine whether or not they wish to participate in the study. The confidentiality of the participating subjects were also guaranteed.

RESULTS:

The questionnaire used in the present study, was a close-ended questionnaire. After the descriptive analysis of the data, it was found that 69% of the students like to use gadgets at night time before sleeping of which 59% of the children complained of frequent headaches in the morning alongwith some difficulty in seeing the blackboard from back benches. 53% of the children had difficulty in concentrating during classes or at home while studying, hence reporting an overall fall in their grades. It was also noted that 58% of the children showed Change in their behaviour as they grew up, moving more towards aggressive nature and he/she argued with parents or family members frequently regarding the use of gadgets. Interestingly, 29% of the children were also reported to have some speech and language delay in their childhood.

DISCUSSION:

Electronic gadgets and other media represent one of the most important and underrecognized influences on children and adolescents' health and behavior. Although objections to these practices can exist on common sense, philosophical, or public health grounds without strict scientific data, [2]increasing numbers of studies document that a serious problem exists. Electronic gadgets have evolved from radio to transistors, to mobile and to tablets and many more. Probably only minute part of the population can be still seen using radio or transistors. The electronic gadgets like the mobile phones or tablets are extremelyhandy and swift to use.The latest trend of the electronic gadgets provides with you the all information of the world including entertainment at few flicks of the finger.[3] Hence, this makes it extremely easier for the working parents to manage their children at home, due to lack of time. Eg: putting them infront of TV or mobile phones while feeding.



This early exposure to electronic gadgets grows as an addiction to these gadgets in the children at very tender age. Any form of interactions to the outside world affects the child's mental, physical, cognitive and psychological development. Hence, in this new era of virtual technologies and globalisation, it becomes our utmost

responsibility to raise our children in a healthy growing environment.

Surprisingly, Daily Mail in the year 2013 reported that almost 29% of the toddlers can use a gadget easily and remaining 70% masters by primary school age. According to USA Centers for Disease control and prevention, an average child spends about 8 hours a day watching electronic screens.[4]

In the present study, a closed-ended questionnaire regarding the effects of the use of these electronic gadgets on behavior, academic performance and overall health was put forward to the pupils of the students from 6^{th}-10^{th} standard. The main reason behind giving the questionnaire to the parents was the fact that the parents know their children better, and hence any abnormalities regarding the health, behavior or cognitive performances will be first noted by the parents themselves.

Electronic gadgets per se can be rightly said as a double edged sword. Gadget used by children can have both positive and negative impacts. Use of electronic gadgets helps in several ways in improving the motor and cognitive skills of a child, serves as an easier tool for education and more fun way of learning through various apps than just books or older methods.

But those mesmerizing screens bring about a number of long term health threats too. In the present study, we noted that almost 67% of children spend more time in social media or online gaming than outdoor activities, and almost 84% Of them have their accounts on social networking websites. This gives us an insight on the future development of health problems due to reduced physical activities among children.

It was also found that, 69% of children spend their time using mobile phones or other gadgets at night before sleeping which was found concomitant with 59% of children waking up with headaches in the morning and early use of spectacles. This result was in accordance with a survey done by American Optometric Association (AOA) 2015, which concluded that excess screen time can result in digital eye strain which can include burning, itchy or tired eyes.[5]Also, headaches, fatigues, blurred or double vision, head and neck pain are other threats for children using screens too often and for too long. Centre for Disease Control and Prevention, USA, highlighted the higher chances of development of myopia in children spending more than 8 hours daily on gadgets. They reported that, when people use electronic gadgets, they blink less. While on an average a person blinks 15 times a minute, spending more time on screen can drop the rate upto less than 5 times in a minute.[4]

Electronic devices gives off high-energy, short wavelength blue and violet light. This light has the capacity to affect vision and cause premature aging of the eyes. Blue light is also very near to the UV light in wavelength and energy and is easily transmitted to the retina causing a cumulative damage over a lifetime of exposure. Apart from this, blue light also interrupts sleep patterns and circadian rhythms when children are exposed to the screen closer to their bedtime. Since, toddlers at this age, may still be learning to settle into healthy sleep patterns, it becomes more critical for the blue-light exposure to be eliminated before they go to bed.[5]

Another study by Montagni I et al, 2016 reported that in comparison against adolescents with very low screen time exposure, very high exposure increased the likelihood of having migraine by 37%. [6]

Interestingly, it was also found that 58% of parents reported their children to be more secretive regarding their gadget use and that they get extremely aggressive and throw temper tantrums when they are forcefully separated from the devices. Sundus M, in his study demonstrated similar kind of behavioral change in children addicted to excess use of electronic gadgets. He reported this particular behavioral change as a result of anxiety. Although, this phase is usually harmless and temporary, but children suffering from anxiety experience from nervousness, shyness and fear. They try to avoid people, places and activities and as a result the child may show aggression or temper tantrums when they can't get online, and interestingly this feeling magically vanishes as soon as their devices are handed back.[4,9] Dr Graham in his study said that "Child gets upset or shows anger when by small things and when they get online they become calmer. He said parents should note the signs of agitation, anxiety and irritation in children". Dr Watts added: "It's pretty normal if a child gets upset for not being able to get online with one's friend, but if a child continuously shows anger or depression not being online then it's time to start a conversation". [7,8]

In the present study, it was also noted that parents of 53% of children reported a drastic fall in their children's grades, and complain them to be extremely hyperactive and lacking concentration in the class or at home while studying. Studies have reported a possible link between excess screen time in children with Attention Deficit Hyperactive Disorder (ADHD). The most common symptoms of ADHD include inattentiveness (being easily distracted, having difficulty getting organized or remembering to do things), hyperactivity (having difficulty sitting still), and impulsivity (making decisions without thinking through the possible consequences).[10]The time in which adolescence are supposed to enhance their social connection by physical interactions, are being spent more on making social media friends rather. The time spent on video chatting or online text messages are more than actual face-to-face interactions. Mid-adolescence is also a period of high neural plasticity during which brain circuitry underlying attention and behavioural control mature rapidly and may be vulnerable to exposures that disrupt neurodevelopment. Eventhough, further studies are required to link all the symptoms of ADHD with use of gadgets, but common factors associated with both cannot be ruled out.[10,11]

Another very interesting fact which was noted was the presence of speech delay in about 29% of the children, although this value was not statistically significant. Studies have also reported a possible relationship between the overzealous modern use of electronic gadgets and speech and language delay among the children. Many

researchers studied that the more time children spent on their smart phones, TV, computers and other handheld devices the more likely the child have delays in excessive speech. Children learn to talk and communicate through interactions with others, and if they don't interact, they don't learn. The study alarmingly concluded that every minute a child is spending on screen is a minute lesser that he/she could speak or learn with others. Also, the more time children between the age groups of 6 months and 2 years spent using their gadgets, the more likely they were to experience speech delays.[4]

CONCLUSION:

Although use of electronic gadgets are not the sole leading cause to any health problems, but they do contribute significantly to a variety of mental and physical health disorders: obesity, sleep disorders, ophthalmic disorders, aggressive behaviour etc.

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