

Effects of Exposure to Digital Screens in Children and Adolescence

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Abstract – During the past three decades, using of screen has become an integral part of life. Over the years the screen has become more sophisticated and technologically developed. It has become a concern among parents and medical professionals on using screens by children and adolescence for excessive amount of time. The study focuses on physiological and psychological effects in relation to sleep deprivation, behaviour changes and possible behaviour outcomes of using digital screens. The sample was a convenient random sample of male children from three urban schools covering kindergarten, middle School and senior school, ages between 05-18 years with a total of 600 children. The initial assessment for children from ages 12-18 was done using a questionnaire to assess the current mental status and focused interviews were conducted. For children below the age of 12 years were assessed individually through play and paper and pencil activities. Data was collected through parents and teachers regarding their behaviour. The same was cross checked with the participants. Minnesota leisure time activity questionnaire, State-Trait anxiety inventory and Outcome questionnaire 45 was used to collect data. A self-assessed questionnaire was used to collect data regarding the use of smart devices, frequency of use and the level of addiction. SPSS 22 was used to assess data. Ethical clearance was taken from the Ethics review committee of university of Peradeniya. There was little social interaction even with parents and siblings. They showed a positive correlation with addiction to video games/extended screen time and antisocial behaviour traits (0.60) p<0.5. The tendency for violent acts including both verbal and physical aggression was found. The study found moderate evidence of positive association

between duration of screen time and severity of symptoms of anxiety (0.55) p<0.5. Children below 12 years showed only aggressive behaviour when devices were removed from them. The screen time used by them is higher compared to children over 12 years. Children with long duration of screen time showed, disturbed and restless in sleep and jittery. Moderate evidence was found with screen time including television, computer, video and mobile phone were associated with poor sleep outcomes including delayed bedtimes, shortened total sleep time, sleep-onset-latency and daytime tiredness. In conclusion, it is a common responsibility to develop strategies to build up children in a safer and a supportive environment along with limited and guided exposure to screens in order to help with physiological and psychological wellbeing as they grow.

Keywords: Screens, Physiological responses, Psychological wellbeing,

Extended Abstract –

Introduction - During the past three decades, using of screen has become an integral part of life. Over the years screens has become more sophisticated and technologically developed. It has become a concern among parents and medical professionals on using screens by children and adolescence for excessive amount of time. The evolution of the screen began from a white cloth screen to today's blue ray light emitting diode screens (LED) which has changed the use of the screen dramatically. In the beginning of the 21st century, with the invention of smart phones, the small screen concept came into limelight and today it has become the most used type of screen in the society. Types of

screens include TV, personal Computers, Laptops, smart phones, tabs and other devices used in day today activities. The world is moving towards paper free storage devices and the mode of entering data has become screens of every sort. Majority of the population of the world including children use smart devices for everyday activities and the time spent in front of a screen has increased over the past decade. Conditioning theories hold that addiction is the cumulative result of the reinforcement. Parents have a tendency to use these devices to control their children to keep them in one place or to make them silent. Level of environmental stimuli is a contributing factor. The study focuses on physiological and psychological effects due to the use of excessive screen time. The study is conducted in relation to sleep deprivation, behaviour changes and possible behaviour outcomes of using screens.

Methodology - The Study included participants with parental consent to participate in the study. The sample was a convenient random sample of male children from three urban schools covering kindergarten, middle School and senior school, ages between 05-18 years with a total of 600 children. The initial assessment for children from ages 12-18 was done using the outcome Questionnaire 45 to assess the current mental status and focused interviews were conducted. For children below the age of 12 years were assessed individually through play and paper and pencil activities. Data was collected through parents and teachers regarding their behaviour. The same was cross checked with the participants. The use of smart devices, frequency of use and the level of addiction was assessed. The aggression scale developed by Pamela Orpinas and Ralph Frankowski was used to measure aggression and the Trait-State Anxiety Inventory was used to measure the level of anxiety. Data analysis was done using SPSS 22 and Ethical clearance was taken by the Ethics Review Committee of University of Peradeniya.

Results and Discussion - The study results show that Parents have a tendency to use smart devices with children in kindergarten to control their

children and make them silent. The study found to have a high level of virtual friendships and relationships compared to mutual social relationships, poor social interaction even with parents and siblings, high level of virtual living was found among middle school and senior school children. Social aggression was a common observation among the sample. They showed a positive correlation with addiction to video games/extended screen time and antisocial behaviour traits. The tendency for violent acts including both verbal and physical aggression was found. The study found moderate evidence of positive association between duration of screen time and severity of symptoms of anxiety (0.55) $p < 0.05$. Children below 12 years showed only aggressive behaviour when devices were removed from them. The screen time used by them is higher compared to children over 12 years. The study is limited to a small sample which makes it a barrier to generalize to wider population. In the same manner the sample consisted only students belonging upper middle class society.

Conclusion - . The study concludes that emotional negligence of parents and addiction to mobile games and smart devices have an impact on social isolation of teenagers and on aggressive behaviour. There was little social interaction even with parents and siblings. They showed a positive correlation with addiction to video games/extended screen time and antisocial behaviour traits. The tendency for violent acts including both verbal and physical aggression was found. The study found moderate evidence of positive association between duration of screen time and severity of symptoms of anxiety. Children with long duration of screen time showed, disturbed and restless in sleep and jittery. Moderate evidence was found with screen time including television, computer, video and mobile phone were associated with poor sleep outcomes including delayed bedtimes, shortened total sleep time, sleep-onset-

latency and daytime tiredness. Screens are the modern method of communication and it is a requirement to understand the need of it as well as the pros and cons of using them. Though the technological advances have made certain screens vivid, still the physiological function of humans are in a phase of evolution to this. Hence there is a common responsibility to develop strategies to build up children in a safer and a supportive environment along with limited and guided exposure to screens in order to help with physiological and psychological wellbeing as they grow.

Figure i: Screen time use of Children below 12 years n - 147

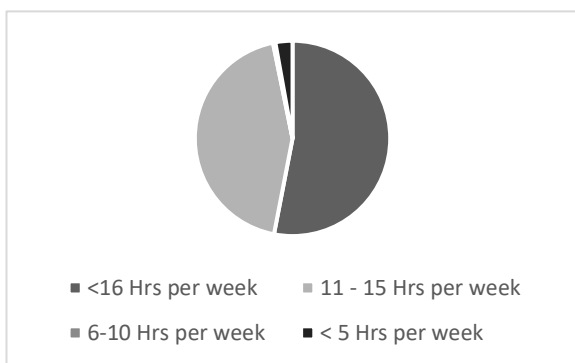


Figure ii: Screen time use of Children above 12 years n – 453

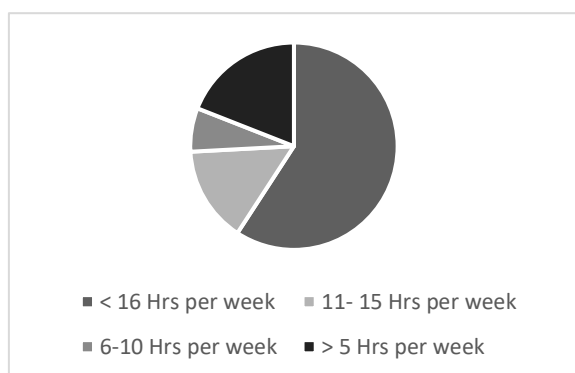


Table i: Types of smart devises used

Type of Smart devise	No of Uses
Television	600
Mobile Phones	580
Tabs	84
Computers	558
Multiple Devises	435

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