

To study the effect of excessive TV viewing on dietary habits and sleep patterns in children 6 to 12 years: An observational study

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Abstract

Media from traditional television to the “new media” (including cell phones, I pads and social media), are a dominant force in children’s lives. The evidence is now clear that they can and do contribute substantially to many different risks and health problems and that children and teenagers learn from, and may be negatively influenced by, the media. The study was carried out to find out the prevalence of TV addiction, and 2 of its most important ill effects i.e. obesity and sleep disturbances, in children between 6 to 12 years, to assess the effect of excessive TV viewing on dietary habits and sleep patterns. An observational, analytical, cross-sectional study was conducted in the outpatient department of Pediatrics in Tertiary level Hospital, Ghaziabad in 500 children between 6-12 years of age from May 2016- April 2017. 80% of children spent more than 2 hours in front of TV out of which 23.4% were watching for more than 4 hours. Snacking habits increased with increased screen time ($p < 0.001$). There was a statistically significant difference in the mean time taken to consume meals while watching TV and while not watching TV. Maximum night awakening was observed in the study group watching 2-4 hours (66.9%).

Keywords: TV viewing, Dietary effects, Sleep, Addiction.

Introduction

Media from traditional television to the “new media” (including cell phones, I pads and social media), are a dominant force in children’s lives. Although media are not the leading cause of any major health problem, the evidence is now clear that they can and do contribute substantially to many different risks and health problems and that children and teenagers learn from, and may be negatively influenced by, the media. However, media literacy and prosocial uses of media may enhance knowledge, connectedness, and health. The overwhelming penetration of television into children’s and teenagers lives necessitates a renewed commitment to changing the way pediatricians, parents, teachers, and society address the use of media to mitigate potential health risks and foster appropriate media use.¹⁻⁵ Effects of excessive TV viewing is a useful area for study. It has been estimated that 5-10% of population suffers from TV addiction and further validation of this figure is required. Also, it is likely to increase. However, in India, a structured research is lacking. There is very scarce data on prevalence of excessive viewing of television in children and how adversely it is affecting our Indian children. With the percolation of TV into almost every bedroom, it is quite likely that TV viewing in children has already taken the proportion of addiction.

Aims and Objectives

1. This study looks into the prevalence of TV addiction, and 2 of its most important ill effects i.e. obesity and sleep disturbances, in children between 6 to 12 years. To assess the effect of excessive TV viewing on:
 - a. Dietary habits.
 - b. Sleep patterns.
2. To study the signs of TV dependence on young children.

Materials and Methods

An observational, analytical, cross-sectional study was conducted from May 2016- April 2017 in the outpatient department of Pediatrics in Tertiary level Hospital, Ghaziabad. 500 children between 6-12 Yrs of age of either sex coming to the outpatient department of pediatrics for minor ailments; who were watching Television and accompanied by parent were included in the study. Child not accompanied by either parent, any child with mental subnormality or motor deficits were excluded from the study. Identity of the patient was kept confidential. Parents were informed and consent was taken before enrollment and the study was approved by the institutional ethical committee.

Questions were addressed to the parents and children together. Parents were asked to recall events occurring over the past 1 month. The structured questionnaire was filled in front of the parents. If information provided for a particular parameter was variable, the higher version/value was considered. The detailed history including socio-demographic parameters, about television viewing, sleep habits and eating habits were elicited from parents and subject together as per a structured questionnaire. Anthropometry and physical examination was done. BMI was calculated and categorized children as underweight (< 18.5), normal ($18.5-24.9$), overweight ($25-29.9$), obesity ($30-39.9$), morbid obesity (≥ 40).

The number of hours the subject watched television on weekdays and weekends and on holidays was separately enquired and a mean TV viewing time was calculated as follows:-

Mean TV Viewing- Hours of television watching per d = (hours of television on weekdays x 5) + (hours of television on weekdays x 2)/7

Results

Only 20% children in the age group of 6-12 years watched TV in acceptable limits i.e. <2 hrs/day. 80% of children spent more than 2 hours in front of TV out of which 23.4% were watching for more than 4 hours. Study group consisted of 60.46% males and 39.4% females. 45.29% of children between 10-12 years of age watched TV more than 4 hours. 90.5% of children who were watching TV more than 4 hours belonged to middle class. Interestingly 60.71% children i.e. almost 2/3rd of children in upper class were watching TV in acceptable limits i.e. <2 hours (Fig. 1).

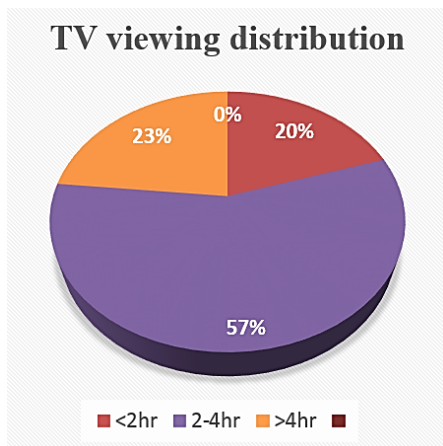


Fig. 1: Percentage of TV viewing according to duration of time

Table 1: TV viewing hours and snacking during TV viewing

TV viewing hrs	< 2 hrs (n=100)	2-4 hrs (n=283)	>4 hrs (n=117)
% of children snacking	14(14%)	64(22.61%)	71(60.68%)

Table 2: Comparison of average time consumed while watching TV and not watching TV

Time consumed (in mins)	<2 hrs	2-4 hrs	>4 hrs
Completion of meal while watching TV (Mean Time)	25.28 mins	32.8 mins	35.76 mins
Completion of meal while not watching TV (Mean Time)	24.8 mins	26.3 mins	26.32 mins
	P value= 0.8	P value= <0.01	P value =<0.001

86% of children had very good sleep. The mean sleep duration in <2 hours, 2-4 hours, >4 hours study group were 8.99 hours, 8.82 hours and 8.79 hours respectively. This difference was not statistically different (Table 3).

Table 3: TV viewing hours and sleep disorders

Sleep Disorders	< 2 hrs	2-4 hrs	>4 hrs
1) Night Awakenings (n=124)	11(8.8%)	83(66.9%)	30(24.19%)
2) Difficulty in falling asleep (a) never (n=390)	80(20.5%)	219(56.15%)	91(23.3%)
b) Occasionally (n=77)	14(18.18%)	43(55.8%)	20(25.9%)
c) Very Frequent (n=45)	6(13.33%)	33(73.3%)	6(13.33%)

In the present study most of the children were taking sugar sweetened beverages and vegetable intake was very low. Parents reported their child to be eating a lot while watching TV. Junk food was increasingly preferred in children with increased TV hours. 14% children in <2 hours category, 27.35% children in 2-4 hours category and 28.9% children in more than 4 hours category preferred junk food. This difference was found to be significant if compared between TV viewing in acceptable limit (<2 hours) and increased viewing (>2 hours) (Fig. 2).

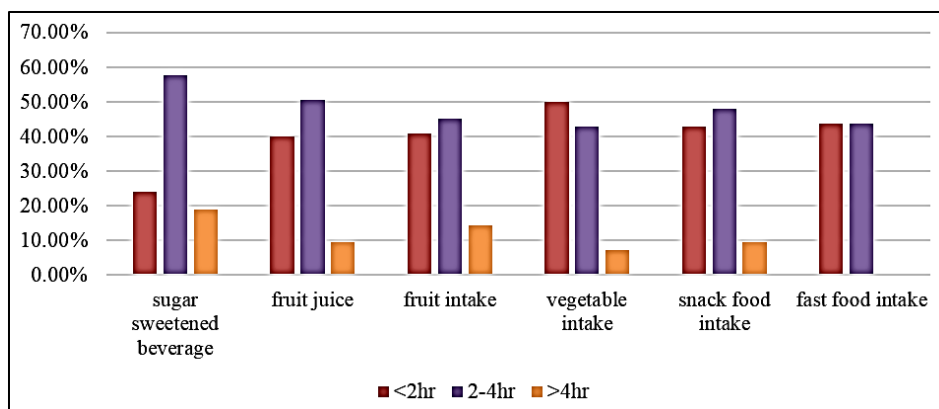


Fig. 2: Eating behavior associated with TV viewing

Maximum night awakenings was observed in the study group watching 2-4 hours (66.9%). Only 9% children in the study group had difficulty in falling asleep. There was no subject in our study who had all features of addiction as per DSM-5 criteria. However isolated features of addiction were present. The group of children watching TV between 2-4 hours have maximum isolated features of addiction (Table 4).

Table 4: TV viewing hours and dependence criteria (DSM-5)

Criteria	<2 h(n=100)	2-4 h(n=283)	>4 h(n=117)
Physical or psychological problems related to use	29(29%)	150(53%)	97(82.90%)
Withdrawal	25(25%)	102(36.04%)	86(73.50%)
Neglected major roles to use	3(3%)	37(13.07%)	20(17.09%)
Social/interpersonal problems related to use	28(28%)	135(47.7%)	87(74.35%)
Craving	20(20%)	123(43.46%)	83(70.94%)
Repeated attempts to quit or control use	36(36%)	179(63.25%)	68(32.47%)
Activities given up to use	6(6%)	25(8.83%)	37(31.62%)
Tolerance	34(34%)	125(44.16%)	83(70.94%)
Much time spent using	21(21%)	110(94%)	61(52.13%)
Hazardous use	19(19%)	112(95.72%)	81(69.23%)
Use larger amounts or longer	47(47%)	123(43.46%)	82(70.08%)

Discussion

In our study 80% of children spent more than 2 hours per day in front of television which is more than the recommended duration of 1-2 hrs per day as per AAP guidelines.³ Excessive TV viewing was found in 23.4% subjects which by definition is screen time more than 4 hours. In our study males were found to be viewing more TV than females. 60.6% as compared to 39.4% females in the total group.

In relation to age, our study revealed that maximum viewership was in 10-12 years age group. 45.29% of children between 10-12 years age group watched TV >4 hours and almost 85% watched more than 2 hours. In the study viewed; it was however found that younger children watched more TV while older children were more involved in video games and computer. Socio-economic status of the subjects in the study group were evaluated by Modified Kuppuswamy Scale and in the present study no subject belonged to lower class. 90.5% children who were watching excessive TV i.e. more than 4 hours belonged to middle class (both upper and lower). Interestingly 60.71% children i.e. almost 2/3rd of children in upper class were watching TV in acceptable limits i.e. <2 hours. The previous studies have

implicated that low parental education and lower socio-economic status are associated with higher screen time in their children. Present study also reconfirms the findings of previous studies.⁶⁻⁹

Effect of BMI

The mean BMI in the study group viewing TV less than 2 hours was 15.69 kg/m². In the 2-4 hr group the mean BMI was 16.37 kg/m² while in the group watching TV for more than 4 hours the mean BMI was 16.4 kg/m². This difference was not statistically significant. Mothers working status theoretically should affect TV viewing time in children presumptively because if at home, they would probably keep an eye on their children's TV viewing habits. Mothers working out are deprived of this regulatory act and children may become more glued to their TV sets. However in our study, 69.2% children's mother were housewives and 85.5% of their children were watching TV more than 2 hours. While 24.85% were watching TV more than 4 hours. On the other hand, in the working mother group however with increased no. of duty hours the screen time of their children increased in a linear fashion.

Eating behaviour in children

In the present study most of the children were taking sugar sweetened beverages and vegetable intake was very low. Parents reported their child to be eating a lot while watching TV. Junk food was increasingly preferred in children with increased TV hours. 14% children in <2 hours category, 27.35% children in 2-4 hours category and 28.9% children in more than 4 hours category preferred junk food. This difference was found to be significant if compared between TV viewing in acceptable limit (<2 hours) and increased viewing (>2 hours).

In the group of children watching excessive TV >4 hours 61.53% were eating less while watching TV while 20.5% were eating more. Snacking habits also increased with increased screen time. Only 14% children were snacking while watching TV <2 hours. While 22.61% children watching TV between 2-4 hours were snacking. This figure increased to 60.68% in children who were watching more than 4 hours. Snacking while watching TV increased with increasing screen time and this difference was statistically significant ($p < 0.001$).

Previous studies have found that TV viewing is associated with unhealthy dietary behavior among older children and adolescents including consumption of fast foods, high fat foods and sugar sweetened beverages and consumption of fewer fruits and vegetables. Also, TV viewing is associated with a lesser intake of those foods which are rarely appearing in advertisements and a greater intake of highly advertised food items suggesting that food advertisements promote unhealthy consumption patterns. Our results confirm and extend findings of previous studies which found a positive association between TV viewing and fast food consumption. While our study did not involve examination of the content of children TV programs we did show association between TV viewing and higher consumption of highly advertised items like sugar sweetened beverages, fast food, snack food and lower consumption of fruits and vegetables.⁶⁻¹⁰

The mean time taken to consume meals in the 3 study groups i.e. (<2 hrs, 2-4 hrs and >4 hrs) while watching TV and while not watching TV was calculated and the difference was statistically significant children in all group were taking longer time to finish meal while watching TV.

Sleep patterns

86% of parents of children marked sleep of their child as very good. In our study group TV viewing hours >2 hrs doesn't affect children sleep quality according to parents. The mean sleep duration in <2 hr, 2-4hr, >4hr study groups were 8.98hrs, 8.82hrs and 8.79hrs respectively. There was no significant difference between the sleep duration ($p > 0.05$). Only 24.8% children had night awakening in the study group, out of which in children watching for < 2 hours, only 8.8% had night awakening, 24.19% had night awakening who were watching TV between 2-4 hrs while 66.9% children with TV time >4 hrs had night awakening. This difference was not statistically significant (p value=0.051).

Only 9% children had difficulty in falling asleep. However, there was no statistical difference between the group watching <2 hrs and the one watching >4 hrs. 78% of the children did not complaint any difficulty in falling asleep. Night awakening was more when children watch TV >2 hr. In our study, excessive TV viewing hours doesn't affect initiating sleep at bed time. Most studies⁸⁻¹⁰ as mentioned in review of literature have associated increased TV viewing with decreased sleep time. Another factor associated was the presence of TV in bedroom. Overall each additional hour per day of TV viewing from infancy to mid childhood was associated with 7 fewer minutes per day of sleep over the same period. TV viewing habits that were associated with the greatest number of sleep disturbances were bedtime TV viewing and use of TV as a sleep aid. A TV in a child's bedroom was found to be a very powerful predictor of overall sleep disturbance and bedtime resistance in the logistic regression analysis followed by amount of TV viewing per day.

The second aim of our study was to study the incidence of addiction to TV in the study group. DSM-IV had laid down 7 criteria to define an addiction to a particular substance, TV addiction also being defined similarly. However DSM-V describes 11 criteria to be fulfilled to be labelled as addiction. In the present study however no child fulfilled all 11 criteria but definitely compulsion to watch TV, leave social functions, leave games were seen as essential aspects of TV watching. The ill effects of excessive media use in children have been well established beyond doubt and our study reconfirms it. In present scenario, not only television but smartphone and internet pose a serious threat to both mental and physical health of children. Not only is it limiting their physical activity, promoting obesity but also the unchecked and ungoverned content of internet is prematurely exposing them to adult content impressing upon young and tender minds. Pediatricians play an important role in guiding the parents and children to motivate a rightful use of media for a healthy future of our children.

Source of funding

None.

Conflict of interest

None.

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