

Review Article

Does television viewing make children obese? a review

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ABSTRACT

Watching television (TV) is an activity that very common and increasing in children and will lead to the adverse effects on health. This study aim to inform the readers, how TV viewing influences of weighs gain in the children. This data was collected from January 2003 to 2013 used Google scholar and PubMed databases with the published papers only. The articles were limited to English language and focus on the TV viewing, obesity and children as keywords. TV viewing has great influence to the consumption of high-fat foods whereas increase body mass index (BMI) eventually. Those who watch more frequently commercial TV will stimulates food intake and overconsumption, it's also promote sedentary behavior, less energy expenditure and have high risk to be obesity. TV viewing not just promote sedentary behavior or less energy expenditure but also stimulates food intake, overconsumption, influence food choice and eating occasion in front of the screen, whereas have significant correlation to the obesity in children.

Keywords: TV viewing, Obesity, Children

INTRODUCTION

Watching TV is an activity that very common in children. There is increasing concern that number of television watched by children will lead to the adverse effects on health. In the US for example there is 75 percent of children watched television for an average of approximately one hour and 20 minutes on typical day.¹

While in China, children and adolescents who pay more attention to TV commercials are more likely to request, purchase, and consume snacks they see advertised on TV,

paid attention to TV particularly commercial TV were more persuade to engage in the promoted snacking behavior.² TV as a media has a disturbing potential to negatively affect many aspects of children's healthy development, including weight status, sexual initiation, aggressive feelings and beliefs, consumerism and social isolation.³

Numerous studies asserted that advertising on children's television appears to be related to the prevalence of excess body weight among children. Furthermore, the content of the advertising appears to have a specific

effect.⁴ Food advertising intentionally targets children who are too young and immature to distinguish advertising puffery from truth, it's also encouraging children to consume high calorie, junk foods on a regular basis. Young children with limited cognitive abilities, often assume that the food products advertised on television are part of a healthy diet and maintain these misconceptions and develop unhealthy eating patterns at an early age.⁵

Another studied also stated that exposure to television food commercials enhanced high television viewers' preferences for branded foods and increased reported preferences for all food items.⁶

In a recent review of the literature examining the effect of television on children's consumption patterns, it's conclude that exposure to food advertisements significantly increases the likelihood that a child will select or request the advertised product, this is stronger evidence that TV has been proposed as contributed factor to the obesity.⁶⁻⁸

In contrast, others studies also regarded that contention TV viewing does not contribute to obesity because it is a sedentary activity.⁷ Additionally, Boyland, et al stated that children with greater previous exposure to commercials (high television viewers) seems to be more responsive to food promotion messages.⁶ Then Zimmerma, and Bell asserted that not all TV programs associated to the obesity particularly noncommercial television (educational television presented without in-program commercials or videos or DVDs) had no statistically significant association with subsequent or concurrent obesity.⁷

This literature explains us that TV viewing toward obesity is unclear topic so needs further study to bring us

in the same perception. Therefore, this study aims to inform the readers, how does TV viewing associated to obesity in children.

REVIEW METHODS

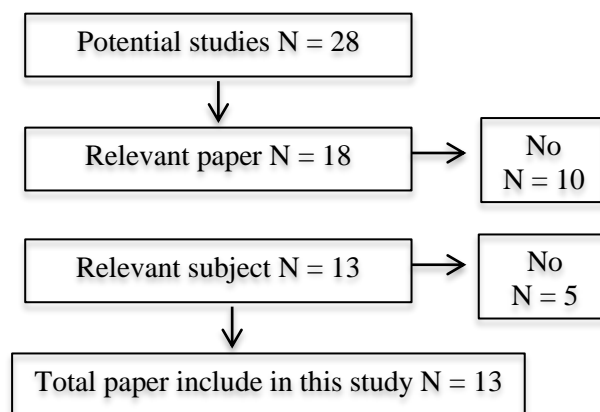


Figure 1: Flow diagram of study selection.

Data for this review were collected between January 2003 to 2013 used Google scholars and PubMed database with the published papers only. The articles were limited to English language and focus on the TV viewing, obesity and children as keywords.

RESULTS

Entire relating papers in this study were identified for review. These papers focus on TV viewing and obesity in children that was published in journals articles between 2003 till 2013 (within last 10 years), such elaborated in Table 1 below.

Table 1: Review of association between TV viewing and obesity in children.

No	References	Sample & population	Study Design	Finding (Association between TV viewing and obesity) Yes/No	Comment
1.	Sameer H. Al-Ghamdi, 2013	N=397 age 9-14 years old	Case control study	Yes	TV watching represents an important risk factor for obesity in children of school age. It confirms that a substantial percentage of children of school age view TV for more than three hours on weekdays and at weekends. Increase in a child's age, the presence of more than one TV at home, having their own TV, and an increase in the number of hours of watching TV over the weekend were significantly associated with an increased risk of childhood obesity. ⁹
2.	Robert J Hancox, Barry J	N=1013 age 5-15 years old	Cross sectional	Yes	Childhood and adolescent (age 5–15 years) television viewing predicted a

	Milne, Richie Poulton, 2004				higher body-mass index, lower VO2max, higher serum cholesterol, and increased cigarette smoking at age 26 years. ¹⁰
3.	Julio A Poterico et, al. 2008	N=21.712 women with age 15-49 years old.	Cross sectional	Yes	The mechanism by which television viewing is associated with obesity is not yet clearly established. It might be due to lack of physical activity, and unhealthy eating (consumption of high sugar-sweetened beverages and processed foods) while watching television. ¹¹
4.	Frederick J. Zimmerma, and Janice F. Bell, 2010.	N=1118 with 7-13 years old.	Cross sectional	No	The evidence does not support the contention that television viewing contributes to obesity because it is a sedentary activity. Television advertising, rather than viewing per se, is associated with obesity. ⁷
5.	Donna M Matheson, et, al. 2004.	60 students with 7,8-9,6 years old.	Cross sectional	Yes	A significant proportion of children's daily energy intake is consumed during television viewing, and the consumption of high-fat foods on weekends may be associated with BMI in younger children. ¹²
6.	Chrystalleni Lazarou, et al. 2009	1140 children (mean age = 10.7±0.98 years)	Cross sectional	Yes	Sedentary behaviors such as TV watching may be more important predictors of children's various obesity indices than PA behaviors. ¹³
7.	I. Janssen, et al. 2005	137 593 youth (10–16 years)	Cross sectional	Yes	Television viewing as a leading factor associated with adolescent obesity, the mechanisms linking television viewing with overweight and obesity in youth include an increased caloric intake from eating during viewing or from the effects of food advertising, and reduced energy expenditure from television viewing displacing physical activity. ¹⁴
8.	Maria del Carmen, et al. 2009.	18 784 adolescents with 10-19 years old.	Cross sectional	Yes	Watching TV for long hours may lead to an increased risk of obesity both through reduction of energy use and changes in diet. ¹⁵
9.	Lori A. Francis, Yoonna Lee, and Leann L. Birch, 2003	173 non-Hispanic white girls and their parents aged 5,7,9 years old.	Cross sectional	Yes	TVV was linked to weight gain through snacking, with increased TVV relating to more snacking in front of the TV and more frequent snacking. These were related to higher intakes of fat from ED snack foods, which predicted girls increase weight gain from age 5 to 9. ¹⁶
10.	MH Proctor, 2003.	106 children were enrolled during preschool years (mean age 4.0 y) and followed into early adolescence (mean age 11.1 y)	Longitudinal study	Yes	Children who watch more television and play more video games may be less active in general and may have less favorable dietary habits. There seems to be some interaction between these factors (diet, activity, and television habits). Television viewing alters the child's intake of foods in ways that are not adequately reflected by total energy intake or percent of calories from fat. ¹⁷
11.	Russel M. Viner, and Tim J. Cole, 2005.	Children who watching TV up to 5 y (N =	Cohort study	Yes	TV viewing may increase BMI through displacing physical activity or through unhealthy food choices related to eating

		13,135), 10 y (N = 14,875), and 30 y (N = 11,261)			while watching or to food advertising. ¹⁸
12.	Froydis N Vik, et al. 2013	7915 children (mean age: 11.5 years) in eight European countries	Cohort study	Yes	The odds of being overweight was lower for children who reported to never watch TV at lunch and dinner compared to those who did. ¹⁹
13.	Ayako Sasaki, et al. 2010	616 preschool children, who were 2 to 6 years of age	Cross sectional	No	no positive association between TV viewing and overweight status, possibly owing to the influence of social environment, low statistical power, or misclassification. ²⁰

TV viewing or media use is thought to be related to the weight gain in children because affect both energy intake and expenditure. This study has viewed thirteen papers that informed us about influence of TV viewing toward obesity in children, eleventh studies have conclude significant correlation between TV viewing and weight gain, while two studies stated no correlation. Based on this finding we can conclude that most of studies mentioned that TV viewing has positive relation to the obesity in children.

DISCUSSION

This study shows us that association between advertising and overweight among children may be mediated through more specific factors, such as generalized marketing activities (e.g. advertising to parents, promotions to children through the internet or at the point of sale) or through other non-specific socioeconomic factors (food pricing, food availability, cultural preferences) which influence consumption and lifestyle patterns but which are also reflected in the nature and degree of commercial advertising on children's television.²¹ TV viewing may not just promote sedentary behavior there is evidence that it's also stimulates food intake and overconsumption, specifically of snack foods. Children who eat their meals in front of the TV tend to consume more dietary fat. The number of hours of TV viewing by teenagers was significantly correlated with the number of unhealthy food items consumed per day, so could be concluded that relationship between TV viewing and childhood obesity appears not merely a matter of excessive sedentary activity but exposure to food adverts promotes more consumption calories.²²

It's consistent with previous study that mentioned watching TV affect both energy intake and expenditure, it's requires no energy in excess of resting metabolic rates, and it may reduce the time spent in more energy-expensive activities. By watching TV is most of food heavily advertised and more likely to be consumed by children, not only that TV viewing will be a food references in the programs themselves.²³ Another study

support that reducing television, videotape, and video game use may be a promising, population-based approach to prevent childhood obesity.²⁴

Additionally, television viewing also has been found to be associated with snacking behavior, and participants who spend more time watching television tend to follow an unhealthy eating pattern. The combination of those factors, less physical activity, increased sedentary behavior, less energy expenditure, and increased food and energy intake.²⁵ There are two primary pathways that could explain the link between TV viewing and obesity. First, frequent TV viewing may lead to obesity through increased energy intake. For example, TV watching may trigger energy intake because hands are free and little else is happening. Excess intake may also occur outside of TV watching due to TV advertisements for foods high in sugar and fat. Second, frequent TV viewing may lead to obesity through decreased energy expenditure (i.e., increased sedentary living and/or decreased PA). Frequent TV watching could increase time spent sitting and could also displace exercise because of the lack of time.²⁶

Current study also stated that there are four proposed mechanisms underlying the relationship between television viewing and obesity in children: 1) the displacement a number of activities including homework and studying time, 2) reduction in resting metabolic rate which is leading to decrease in total energy expenditure and positive caloric balance 3) television content which has capacity to influence food choice and preference of children, and 4) between-meal snacking in front of the television (eating occasion in front of the screen).²⁷

Limitation of the study

This study review only include relatively few, distributed studies across many years and mostly used cross sectional design, another limitation of this study is the study not explored the TV program such as commercial and noncommercial program in advance. Thus, it's hard to

compare and determined whether TV viewing is independent factor for obesity in children.

CONCLUSION

TV viewing is something that needed by most childrens for gain refreshing mind or relax activity, but if we do more often will lead us to the adverse health consequences such obesity. There four mechanisms underlying the relationship between television viewing and obesity in children first is displacement of activities, second decrease total energy expendicture, third influence food choice and preference of children, last eating occasion in front of the screen.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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