

# Television Viewing and Obesity in Children in Khartoum State

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**Abstract:** *Background:* Increased TV viewing time among children is associated with a raised likelihood of overweight. This results from a combination of unhealthy dietary habits, sedentary behaviour and exposure to TV advertising. It also appears that excessive TV viewing among adolescents may lead to poor dietary patterns in later years. Reducing television time can lead to decreases in BMI (Hancox, et al, 2004) (Viner, et al 2004)(De Craemer, 2012). The main purpose of the present study to identify the relationship between television viewing and childhood obesity in public basic schools in Khartoum state. Sample of 120 pupils (males) aged between (9-14) years were selected from three primary schools to participate in the present study. Data collected using anthropometric measurements (weight and height) and also through structured questionnaire filled with children, data were analysed using SPSS and results were tabulated and discussed accordingly. To determine the prevalence of obesity related to TV viewing among children at three schools in Khartoum state, their BMI were calculated and plotted using the international curves of BMI for age and sex. The study revealed, 34 %of children were found to be at risk for overweight (85th –95th), and 7% were found to be overweight or obese (>95th).The results showed that, BMI percentile>95th was positively correlated with children number of hours spend /day in watching TV (1--2hours, 3-4 hours, More than 4 hours), ( $R=.622^{**}P=.000$ )( $R=.531^{**}=P.000$ ) and ( $R=.711^{**}P=.000$ ) respectively. It was also observed that BMI percentile (85th –95th) was positively correlated with the number of hours spend /day for watching T.V, (1--2hours, 3-4hours, More than4hours), ( $R=.456^{**}$ ,  $P=.000$ ,  $R=.478$ ,  $P=.000$ ,  $R=.631^{**}$ ,  $P=.000$ ), respectively. Linear regression examine the more predictable factors.Period of Watching TV (3-4 hours), eating fast food and frying potatoes were still maintaining the predictability of obesity along with eating chocolates and biscuits. The study concluded there were positive association between obesity and longer periods of television viewing among school children. It was recommended that School education programs should be directed to educate children and their families to reduce time that spend in front of the television and council them about healthy and nutritious foods.

**Keywords:** Obesity, Television viewing, Fast food

## 1. Background

Childhood obesity is becoming widespread and growing problem in the world with significant medical, psychological, and economic consequences. Child obesity is a major public health problem with both individual and environmental causes. Among all the factors that may be related to changes in a child's body weight, nutrition, and public health studies have highlighted the relationship to hours spent on television viewing and fast-food consumption (Ashton, 2004). It has been reported that children spend more time watching T.V than any other activity. This is important since television has a powerful influence on the life of children. Time spent watching T.V displaces more active pursuits such as outdoor physical activities. Moreover, food consumption among children appears to be negatively associated with the quality of diet in ways that plausibly could increase body weight (Giammattei, et al, 2003).

A number of studies have examined the association between children's hours of T.V viewing or the fast-food consumption and child obesity. Evidence from the fields of public health and nutrition has shown that hours of TV viewing and fast-food consumption are two crucial factors that determine child obesity there has been no attempt to investigate the extent to which these two activities are interrelated (Boynton, et al, 2003), (Blass, et al, 2006). (Atherson, & Metcalf, 2005).

Mothers and fathers do not want their children to play outside without supervision, a situation that encourages youngsters to view more television and use computers

instead of exercising. The result is that televisions and computers, in essence, have become babysitters (Epstein, et al, 2008). According to Mayo Clinic reports, children and families in the United States view television and operate computers and video games excessively while eating too much junk food (Kaur, et al, 2003).

A study in the University of Liverpool psychologists, demonstrated that obese and overweight children increase their food intake by more than 100% after watching food advertisements on television; A group of 60 children of varying weights, aged between nine and eleven years were shown a series of both food television adverts and toy adverts, followed by a cartoon. Food intake following the food adverts was significantly higher compared with the toy adverts in all weight groups, with the obese children increasing their consumption by 134%; overweight children by 101% and normal weight children by 84% (Hitchings & Moynihan, 2008).

In Sudan many studies in the area of obesity have been demonstrated and television viewing mentioned as one of the sedentary factors in obesity researches, but few published study highlighting the relationship between television viewing and obesity. Interesting result in Sudan demonstrated the hours spent in watching T.V which reflects the sedentary lifestyle of group of children. The study revealed, the majority of the obese (40%) and overweight (38%) used to watch T.V for more than 4 hours/day compared to only 4% of the underweight group where the majority (85%) of them spent less than 4 hours watching T.V (Salih, 2007).

## 2. Justification

Childhood obesity is a serious problem; the rate of overweight and obese children and adolescents has doubled over the last two decades. Medical complications of obesity usually seen only in adults have now begun to appear in children and adolescents. Children in Sudan like the other children in developed and developing countries are increasingly engaging in sedentary behaviour, spending less time exercising outdoors and more time watching television and playing video games. Television viewing may contribute to childhood obesity both by reducing energy expenditure from displacement of physical activity and increasing energy intake from increased snacking during television viewing or as a result of exposure to food advertising. Few researches area or misinformation in Sudan about the relation between watching T.V and obesity in children. Therefore the present study is aiming to identify the prevalence of obesity related to T.V viewing among Sudanese children at this age group (9-14 years old).

## 3. Objective

To identify the relationship between televisions viewing behaviours and childhood obesity among schools children aged between (9-14) years old in Khartoum state

## 4. Material and Methods

The study was cross-sectional, descriptive, conducted in Khartoum state (Khartoum, Omdurman, and Bahry). The study took place in 3basic public school from each provinces(boys).Only grade 5th, 6th, 7th, and 8th were include in the study and the pupils were selected randomly.120 pupils were included in the present study. To determine the child's weight and height, a bath room weighing scale was used to measure child weight in kilograms and standardized stadiometer was used to give the child's height in centimetres'. The child's BMI was then calculated using the following standard formula:

$$\text{BMI} = \frac{\text{Weight/kg}}{(\text{Height/m})^2}$$

Body mass index (BMI) interpretation:

BMI\Age Percentile	Interpretation
<5th	Underweight
5th –85th	Normal
85th –95th	At risk for overweight
>95th	Overweight or obese

## 5. Results

The analysis of data that had been collected through structured interview with some Sudanese basic school children in order to assess the prevalence of obesity related to T.V among children aged between (9–14) years old.

**Table 1:** Age of the children

Age group	Frequency	%
8-10	20	16.6
11-12	63	52.5
13-15	37	30.8
Total	120	100

Table 1 shows age structure, 16.6% of the children were at the age group between 8-10 years, 52.2% of the children between the age group of 11-12 years, and 30.8% of them at the age group between 13-14 years.

**Table 2:** BMI among the school children:

Percentile	Interpretation	Frequency	%
<5 <sup>th</sup>	Underweight	22	18
5th –85th	Normal	49	41
85th –95th	At risk for overweight	41	34
>95th	Overweight or obese	8	7
Total		120	100

Table2, shows BMI percentile was used to assess children's degree of obesity, 34% of children were found to be at risk for overweight (85th –95th), and 7% were found to be overweight or obese (>95th).

**Table 3:** Number of hours spent per day for watch T.V

Number of hours spend per day for watch T.V	Frequency	%
1-2 hours	70	58
3-4 hours	34	28
More than 4 hours	16	14
Total	120	100

More than half of children (58%) watched T.V from 1 to 2 hours, 28% watched TV from 3 to 4 ours /day and 14% watched it more than four hours /day.

**Table 4:** Watching T.V while eating

Frequency		%
Yes	76	63
No	44	37
Total	120	100

Table 4 shows that 63% of the children watched TV while eating, and 37%stated that they did not eat food while watching TV.

**Table 5:** Types of items eaten by children while watching T.V

Items	Yes	%	No	%
Pop corn	20	17	100	83
Biscuits	40	33	80	67
Crispy	33	27.5	87	72.5
Fried potato	61	51	59	49
Soft drinks	50	42	70	58
Fast food	27	22.5	93	77.5
Fresh fruits and vegetables	8	7	112	93
Juice	21	17.5	99	82.5
Yoghurt	5	4.2	115	95.8
Milk	13	11	107	89
Chocolates	36	30	84	70

The type of foods consumed by the children while watching TV, were fried potatoes (51%), soft drinks (42%) biscuits (33%) and chocolates (30%). Moderate consumption was observed for crispy (27.5), fast food (22.5%) juice (17.5%) and popcorn (17%).

**Table 6:** Correlation between children BMI&Number of hours spend per day for watch T.V

Variables	1-2 hours		3-4hours		More than 4 hours	
	R	P	R	P	R	P
<5th	-.051	.071	.148	.067	.123	.068
5th-85th	-.098	.161	-.140	.056	-.150*	.032
85th-95th	.456**	.000	.478**	.000	.631**	.000
>95 <sup>th</sup>	.622**	.000	.531**	.000	.711**	.000

The major independent variables in this study were Interco related. BMI percentile >95th was positively correlated with children number of hours spend /day in watching TV (**1--2hours, 3-4hours, More than 4 hours**), (R=.622\*\*P=.000) (R=.531\*\*, =P.000) and (R=.711\*\*, .000)respectively. It was also observed that BMI percentile(85th -95th) was positively correlated with **the number of hours spend per day for watching T.V, (1--2hours, 3-4hours, More than4hours)**, (R=.456\*\*, P=.000, R=.478, P=.000, R=.631\*\*, .000), respectively. No correlation was detected between the number of hours the children spend watching TV and percentile BMI <5<sup>th</sup>, 5th-85th.

**Table 7:** Multiple linear regressions of association between BMI Percentile and Television viewing among the children

Model	B	Std Error	Beta	T	Sig
Dependent variables BMI percentile:					
Constant	135.654	5.104	-	26.580	0.000
Number of hours spend per day for watch T.V	13.338	6.715	.203	2.688	0.000
Fast food	10.722	4.798	.318	4.023	0.000
Chocolates	9.539	2.509	.205	2.390	0.017
Biscuits	4.949	2.514	.172	2.132	0.02
Frying potatoes	11.257	5.168	.233	15.149	0.000

**Multiple linear regression of association between all variables and BMI percentile**

The overall variables effect on obesity was also examined and analysed by linear regression following the insertion and adjustment of all variables beside the BMI percentile Measures to examine the more predictable factors. **Number of hours spend per day for watching T.V, eating fast food, and frying potatoes** were still maintaining the predictability of obesity along with eating chocolates and biscuits,

**6. Discussion**

Television has often been presented as a sedentary activity in population all over the world. The present study revealed strong relationship between obesity and TV view Moreover, this results remained when controlled several potential variable (number of hours spend in watching TV and types of food eating while watching TV. The context for any relationship between television viewing and obesity at this age is alarming. The present study showed that 41% of children were overweight and obese, child obesity continued to occupy an important position in the world, because of its complication for children present life and later in their adult hood and obesity lead to many cardiovascular disease such as, diabetes, hypertension and coronary heart disease.

Regarding the period that children spend in watching TV,

long periods of television viewing are common in children; beside obesity this may affect their performance in the school. In the present study strong significant correlation was detected between duration of TV watching and child obesity. This is in line with the National Health Examination Survey (NHES), which found significant association between the duration of time the children spend watching T.V and the prevalence of obesity (Dietz & Gortmaker, 1985). Multiple linear regression analyses also suggested that **the number of hours the children spend in watching TV (3-4 hours), eating fast food and frying potatoes** were strong predictable variables of obesity along with eating chocolates and biscuits. Previous study was found thateating fried potatoes and chocolates whilewatching TV was strong predictor of change in the child's BMI" and other measures of body fatness (Proctor, et al, 2003). It was observed that the children consumed unhealthy foods like fast food, frying potatoes and sweets like chocolates, and consumed less fruit and vegetables.In general, longer duration of TV watching was associated with high consumption of frying potatoes, fast foods chocolates and biscuits. This is consistent with levels that have been reported in previous studies from affluent countries, but also highlights the generally high levels of television viewing in middle and low income nations (Hossain, et.al, 2007).Increased TV viewing time among children is associated with a raised likelihood of overweight and obesity as revealed in the present study from combination of unhealthy dietary habits sedentary behaviour, diminish facing television for a long time can lead to decreases in BMI (Popkin, et.al 2004). In some countries it is recommended that children should watch less than two hours TV per day and refrain from snacking and eating meals in front of the TV (Rudolf, et.al, 2001).

The study concluded there were positive association between obesity and long period the children spend watching TV. It was recommended that **School education** programs should be directed to educate children and their families to reduce number of hours spend per day in watching TV and council them about healthy and nutritious foods.

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