

# Prevalence of Childhood Obesity and Food Habits in School Going Children of 10 -12 Years

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## ABSTRACT

Childhood obesity is a growing epidemic affecting children at an alarming rate in the world. Childhood obesity has important consequences for health and wellbeing both during childhood and also in later adult life. The rising prevalence of childhood obesity poses a major public health challenge in both developed and developing countries by increasing the burden of chronic non-communicable diseases. The present study was conducted to find out prevalence of childhood obesity and to study the food habits among school going children. It is conducted in Anakkayam panchayath, Malappuram district, Kerala. 200 samples were selected and information collected using questionnaire. Based on the BMI for age samples classified into obese, overweight, risk of overweight, normal, wasted and severely wasted. Among the total samples there are no obese children, 4.5 percent were overweight, 16 percent are risk of overweight, 63 percent are normal, 9 percent are wasted and 7.5 percent are severely wasted samples. There is more preference for dinner than breakfast among overweight samples (55.6 percent). 44.4 percent skip meals among overweight samples. 31.93 percent prefer sweet items for snacking and preference for fast food among overweight samples were 100 percent. Soft drink consumption is high among overweight samples (88.9 percent).

**Keywords:** Prevalence, Childhood, Obesity, Food Habits, School Going Children

## INTRODUCTION

Good nutrition is the bedrock of child survival and development. Well-nourished children are better able to grow, learn, play and participate in their communities. They are also more resilient in the face of crisis. Healthy nutritious diet is an essential component in the growing and developing years of children. It aids in building a strong foundation in the child with regard to staying healthy and imbibing good eating habits right from childhood. The three most important benefits of early childhood nutrition are it helps in building immunity against various infectious diseases, ensures proper development of brain and other vital organs and improves child's activity levels and cognitive functioning. Therefore, proper nutrition for children is important as it sets the stage for them towards living a healthy and balanced life for the rest of their lives.

Childhood obesity is a growing epidemic affecting children at an alarming rate in the world. Overweight and obesity is when a person is too heavy for his or her height. Abnormal or excessive fat accumulation can impair health. Body mass index (BMI) is an index of weight-for-height commonly used to classify overweight and obesity. Childhood obesity can profoundly affect children's physical health, social, and emotional well-being, and self-esteem both during childhood and also in later adult life.

The rising prevalence of childhood obesity poses a major public health challenge in both developed and developing countries by increasing the burden of chronic non-communicable diseases. So, the study on ‘Prevalence of childhood obesity and food habits in school going children of 10 -12 years’ was conducted with the objectives to find out prevalence of childhood obesity and to study food habits among school going children.

## METHODOLOGY

The area selected for the study was Anakkayam panchayat, Malappuram district, Kerala due to easy reachability and convenience. 200 samples aged between 10 to 12 years, including both boys and girls from H S A U P School Pappinipara, Manjeri were selected by simple random sampling method. A structured and pre tested interview schedule was prepared to collect information relating to socio-economic background, nutritional status, food habits and dietary pattern. Respondents from the selected area were approached, the purpose of the study was explained and rapport was developed. The collected data was compiled, tabulated, analyzed and results were discussed and interpreted. Appropriate statistical analysis was done.

## RESULT AND DISCUSSION

### SOCIO ECONOMIC PROFILE OF THE SUBJECTS

Table 1 Socio economic profile

N= 200

Criteria	Frequency					Percent					Total %
	OW	ROW	N	W	SW	OW	ROW	N	W	SW	
<b>Age</b>											
10 years	0	4	21	3	2	0.0	12.5	16.7	16.7	6.7	14.5
11 years	4	11	41	7	7	44.4	34.4	32.5	38.9	46.7	35.0
12 years	5	17	64	8	7	55.6	53.1	50.8	44.4	46.7	50.5
<b>Sex</b>											
Boy	4	18	42	10	8	44.4	56.3	33.3	55.6	53.3	41.0
Girl	5	14	84	8	7	55.6	43.8	66.7	44.4	46.7	59.0
<b>Family type</b>											
Nuclear	8	27	90	12	11	88.9	84.4	71.4	66.7	73.3	74.0
Joint	1	5	36	6	4	11.1	15.6	28.6	33.3	26.7	26.0

\*Ow- over weight, Row-risk of overweight, N- normal, W – wasted, SW- sever wasted

There are five subgroups in the total samples, they are overweight, risk of overweight, normal, wasted and severe wasted, in which 14.5 percent are 10year old, 35 percent are 11year old and 50.5percent are 12year old. Most of the overweight and risk of overweight children come under the group of 12 years.

The above table shows a lower prevalence of childhood obesity among the selected samples. The selected subjects are 41 percent boys and 59 percent girls. In the total overweight children 55.6 percent are girls and 44.4 percent are boys. 74 percent of subjects are from nuclear family and 26 percent from joint family. 88.9 percent of total over weight subjects are from nuclear family and 11.9 percent from joint family.

**HEALTH ASSESMENT**

Anthropometric measurements are presented in Table 2.

**Table 2 Anthropometric measurements**

**N=200**

Criteria	10year old		11year old		12year old		Chi-square	P value
	NO	%	NO	%	NO	%		
<b>Height for age</b>								
Normal	27	16.1	60	35.7	81	48.2	3.456	0.485
Stunted	1	4.8	6	28.6	14	66.7		
Severely stunted	1	9.1	4	36.4	6	54.4		
<b>BMI for age</b>								
Overweight	0	0	4	44.4	5	55.6	3.872	0.868
Risk of overweight	4	12.5	11	34.4	17	53.1		
Normal	21	16.7	41	32.5	64	50.8		
Wasted	3	16.7	7	38.9	8	44.4		
Severe wasted	1	6.7	7	46.7	7	46.7		

Total subjects are divided on the basis of height and BMI. There are three categories based on height for age, they are normal, stunted and severely stunted. The above table shows that 48.2 percent of normal samples are 12year old. 66.7 percent are stunted and 54.4 percent of total are severely stunted and belongs to the age group of 12.

Based on BMI for age subjects are classified into obese, overweight, normal, wasted and severe wasted. 55.6 percent of overweight, 53.1 percent of risk of overweight and 50.8 percent of normal samples belong to the age group of 12year. 44.4 percent of overweight samples are 11year old.

**FOOD HABITS AND DEITARY PATTERN**

**Food pattern of subjects**

Table 3 point out the details of the meal time, food pattern and their interest in healthy eating.

**Table 3 Food pattern**

**N=200**

Criteria	Frequency					Percent					Total %	Chi square	P value	
	O W	RO W	N	W	S W	OW	RO W	N	W	SW				
<b>Food pattern</b>														
Vegetarian	1	5	15	2	2	11.1	15.6	11.9	11.1	13.3	12.5	0.3	0.9	
Non-vegetarian	8	27	111	16	13	88.9	84.4	88.1	88.9	86.7	87.5	84	84	
<b>Meal time</b>														
Regular	8	20	81	13	11	88.9	62.5	64.3	72.2	73.3	66.5	3.1	0.5	
Irregular	1	12	45	5	4	11.1	37.5	35.7	27.8	26.7	33.5	11	39	



<b>Interest in Healthy eating</b>													
No	0	2	6	0	1	0	6.3	4.8	0	6.7	4.5	1.6	0.7
Yes	9	30	120	18	14	100	93.8	95.2	100	93.3	95.5	84	94

\***Ow**- over weight, **Row**-risk of overweight, **N**- normal, **W** – wasted, **SW**- sever wasted  
 12.5 percent of the subjects are vegetarians and 87.5 percent are non-vegetarians. Out of the overweight subjects 88.9 percent are non-vegetarians and 11.1 percent are vegetarians. Most of the risk of overweight samples are non-vegetarians.

**Meal pattern of subjects**

Table 4 shows the details of meal pattern of subjects like number of meals in a day, main meal consumed and daily consumption of breakfast.

**Table 4 Meal pattern**

**N=200**

Criteria	Frequency					Percent					Total %	Chi square	P value
	O W	RO W	N	W	S W	OW	RO W	N	W	SW			
<b>Number of meals</b>													
1	1	3	1	0	0	11.1	9.4	0.8	0.0	0.0	2.5	21.	0.0
2	0	1	3	1	1	0.0	3.1	2.4	5.6	6.7	3	98	38
3	5	14	58	2	7	55.6	43.8	46	11.1	46.7	43		*
4	3	14	64	15	7	33.3	43.8	50.8	83.3	46.7	51.5		
<b>Main meal consumed</b>													
Breakfast	1	17	65	11	6	11.1	53.1	51.6	61.1	40	50	13.	0.0
Lunch	3	11	42	5	7	33.3	34.4	33.3	27.8	46.7	34	97	82
Dinner	5	4	19	2	2	55.6	12.5	15.1	11.1	13.3	16		
<b>Daily Breakfast consumption</b>													
No	1	4	18	0	3	11.1	12.5	14.3	0.0	20	13	3.5	0.4
Yes	8	28	108	18	12	88.9	87.5	85.7	100	80	87	59	69

\***Ow**- over weight, **Row**-risk of overweight, **N**- normal, **W** – wasted, **SW**- sever wasted  
 It is evident that 51.5 percent of total subjects consume meals 4 times a day and 43 percent consume 3 times a day and 3.0 and 2.5 percent consume twice and once a day respectively. In overweight samples 55.6 percent take meals 3 times in a day and 33.3 percent take meals 4 times in day. P value is less than 0.05, significant.

Main meals consumed by 50 percent of subjects are breakfast, 34 percent lunch and 16 percent consume dinner. In overweight subjects dinner is the main meal for 55.6 percent and only 11.1 percent choose breakfast as main meal.

**Food frequency table**

Frequency of different food items by samples are highlighted in the table 5.

**Table 5 Food frequency**

**N=200**

Food items		Frequency of food consumption				Total	Chi square	P value
		Daily	Weekly	Twice in a week	Fortnightly			
<b>Cereals</b>	N	200	0	0	0	200	697.9 16	0.000 **
	%	100.0	0.0%	0.0%	0.0%	100.0		
<b>Pulses</b>	N	79	76	21	24	200		
	%	39.5	38.0%	10.5%	12.0%	100.0		
<b>Fruits</b>	N	41	95	40	24	200		
	%	20.5	47.5%	20.0%	12.0%	100.0		
<b>Green leafy vegetables</b>	N	49	91	33	23	196		
	%	25.0	46.4%	16.8%	11.7%	100.0		
<b>Root and tubers</b>	N	36	83	45	30	194		
	%	18.6	42.8%	23.2%	15.5%	100.0		
<b>Other vegetables</b>	N	81	76	25	15	197		
	%	41.1	38.6%	12.7%	7.6%	100.0		
<b>Meat and poultry</b>	N	24	103	42	11	180		
	%	13.3	57.2%	23.3%	6.1%	100.0		
<b>Milk &amp; milk products</b>	N	50	93	23	23	189		
	%	26.5	49.2%	12.2%	12.2%	100.0		
<b>Fish</b>	N	69	68	35	13	185		
	%	37.3	36.8%	18.9%	7.0%	100.0		
<b>Fat and oils</b>	N	34	83	43	28	188		
	%	18.1	44.1%	22.9%	14.9%	100.0		
<b>Preserved foods</b>	N	29	80	50	37	196		
	%	14.8	40.8%	25.5%	18.9%	100.0		
<b>Junk food</b>	N	15	75	51	56	197		
	%	7.6	38.1%	25.9%	28.4%	100.0		
<b>Bakery products</b>	N	56	71	42	24	193		
	%	29.0	36.8%	21.8%	12.4%	100.0		

The above table shows the frequency of food intake of the samples. 100 percent of the samples take cereals daily. 39.5 percent consume pulses daily and 38 percent weekly. Milk and milk products, meat and poultry consumed are weekly by 57.2 and 49.2 percent respectively. 7.6 percent of samples take junk food daily and 38.1 percent weekly. 29 percent of the samples consume bakery products daily. P value of food frequency is 0.000, and is therefore significant.

**Preference of protein foods**

The given table describes the protein food preference of the subjects.

**Table 6 Preference of protein food**

**N=200**

Criteria	Number*	Percentage
Red meat	25	12.5
Poultry	41	20.5
Fish	49	24.5
Egg	19	9.5
Milk	43	21.5
Pulses	49	24.5

\*Multiple response

The most preferred protein foods among samples are fish and pulses. 21.6 percent of subjects prefer fish and pulses. 19percent prefer milk and 18.14 percent prefer poultry. Least preferred food is egg (8.04 percent).

**Fast food consumption**

Table 7 shows the fast-food consumption of samples.

**Table 7 Fast food consumption**

**N=200**

Criteria	Frequency					Percent					Total %
	OW	ROW	N	W	SW	OW	ROW	N	W	SW	
<b>Prefer fast food</b>											
No	0	8	33	7	1	0	25	26.2	38.9	6.7	24.5
Yes	9	24	93	11	14	100	75	73.8	61.1	93.3	75.5
<b>Most likely food</b>											
Homely food	5	21	92	16	11	55.6	65.6	73	88.8	73.3	72.5
Fast food	4	11	34	2	4	44.4	34.4	27	11.1	26.7	27.5
<b>Meals from Outside</b>											
Never	6	17	71	14	11	66.7	53.1	56.3	77.8	73.3	59.5
1-2 times	2	15	51	4	4	22.2	46.9	40.5	22.2	26.7	38
3-4 times	1	0	4	0	0	11.1	0	3.2	0	0	2.5

\*Ow- over weight, Row-risk of overweight, N- normal, W – wasted, SW- sever wasted

The above table shows that 75.5 percent of subjects prefer fast food and 24.5 percent do not prefer fast food. 100 percent of the overweight samples like fast food and 75 percent of the risk of overweight subjects like fast food. And also, 93.3 percent of severely wasted subjects also like fast food.

72.5 percent of total subjects like homely food more than fast food but 27.5 percent like fast food more. Homely food is the most likely food of the 55.6 percent overweight subjects.

### Consumption of processed food

Table 8 reveals the consumption of bakery products and soft drinks.

**Table 8 Consumption of processed food**

**N=200**

Criteria	Frequency					Percent					Total %
	OW	ROW	N	W	SW	OW	ROW	N	W	SW	
<b>Like bakery products</b>											
No	1	4	14	1	2	11.1	12.5	11.1	5.6	13.3	11
Yes	8	28	112	17	13	88.9	87.5	88.9	94.4	86.7	89
<b>Consume soft drinks</b>											
No	1	7	52	6	4	11.1	21.9	41.3	33.3	26.7	35
Yes	8	25	74	12	11	88.9	78.1	58.7	66.7	73.3	65

\***OW-** over weight, **Row-**risk of overweight, **N-** normal, **W –** wasted, **SW-** sever wasted

It is evident from Table 11, 89 percent of total subjects like bakery products and only 11 percent did not like. 88.9 percent of overweight subjects and 87.5 percent risk of overweight subjects also like bakery products. 94.4 percent of total wasted children like fast food. 65 percent subject consume soft drink while 35 percent do not consume. 88.9 percent consume of overweight subjects soft drink and 78.1 percent risk of overweight subjects consume soft drinks.

### CONCLUSION

The study reveals that prevalence of childhood obesity in Anakkayam Panchayath is less. There are no obese samples in the study area and only few overweight and risk of overweight samples are there. Meal time is regular for most of samples and daily breakfast consumption helps to prevent obesity. Moderate physical activity, normal sleep pattern and reduced screen time also reduces chances of obesity. Among overweight samples consumption of processed food and fast food, reduced consumption of fruits and vegetables, less importance to breakfast, decreased time for meal consumption, reduced physical activities and increased sedentary lifestyle by screen use and mobile games favor the weight gain. Thus, the present study highlights the need for efforts to prevent childhood obesity with targeted programmes towards overweight children.

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