

Research Article

A Study To Evaluate The Risk Factors Of Childhood Obesity And To Determine The Effectiveness Of Video Assisted Teaching On Knowledge Regarding Childhood Obesity Among Obese Children Of Selected Schools At Rourkela

Sravanthi Mettu^{1*}, Dr. Shalini R Peter², Dr. Vishnu Dev Mishra³

^{1*}Research Scholar, Rourkela Senior Nursing College, Sundargarh.

²Professor, Rourkela Senior Nursing College, Sundargarh.

³Principal, Rourkela Senior Nursing College, Sundargarh.

Corresponding Author: Sravanthi Mettu

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ABSTRACT

Introduction: Childhood obesity among school-aged children is a growing global health concern, marked by excess body fat that begins early in life. It arises when children consume more calories than they expend—a result of unhealthy eating habits, sedentary routines, and environments that promote processed foods and screen-based leisure. The causes include a combination of family behaviours, school influences, genetic predispositions, and broader social and built environments. Despite growing incidence many schools lack consistent programs for monitoring body mass index, promoting nutritious meals, or ensuring adequate physical activity.

Methodology: A cross-sectional study to evaluate the risk factors of childhood obesity and to determine the effectiveness of video assisted teaching on knowledge regarding childhood obesity among obese children of selected schools at Rourkela. A mixed method research design was used a cross-sectional research design was adopted for assessing the obesity through BMI to evaluate the risk factors of obesity. Pre experimental research design was used for assessing the knowledge among school going children about obesity and risk factors.

Results: The findings related to prevalence of obesity 67(18.10%) of subjects were in underweight, 55(14.08%) of subjects were overweight and 17(4.59%) subjects were in obesity. Risk factors of the study shows that 30.8% having family history of obesity, 18.65% of children take medication for a long time, 20.91% of the children are not going to play outdoor game, 54.06% of children do not like to do daily exercise, 35.40% children like to eat outside food, 57.83% watching T.V. or mobile more than 2 hours on a day, 53.78% like take junk foods, 38.11% children drink sugar, sweetened beverage daily, 23.52% not having good sleep at night, 21.35% were mentally disturb due to family problem. In relation to association between knowledge score and socio demographic variable there is significant association with no. of children in the family chi- value 19.84, df value 02, $p < 0.001$, type of family chi value 10.24, df value 02, $p < 0.006$, family history of obesity chi value 4.00, df value 01, $p < 0.0455$. In relation to association between knowledge score & socio-demographic variable there is significant association with gender chi value 56, df value 02, $p < 0.00001$, area of residence chi value 30.83, df value 04, $p < 0.00001$, type of food chi value 23.88, df value 04, $p < 0.00008$, family history of obesity chi value 10.60, df value 0.005, $p < 0.005$.

Conclusion: In selected schools of Rourkela, overweight are more prevalent than obesity, and both are significantly linked to multiple risk factors. Additionally, socio-demographic characteristics influence both obesity rates and students' knowledge levels.

Keywords: Evaluate, Risk Factors of Childhood Obesity, Video Assisted Teaching, Childhood Obesity.

INTRODUCTION

Childhood obesity is a growing global problem that puts considerable pressure on health care systems. In the United States, it affects approximately 34% of children, posing a serious public health threat due to its link with increased illness and mortality. As a disease,

obesity affects almost every bodily system, including the reproductive systems, joints, liver, kidneys, and heart—and is a major contributor to non-communicable diseases including diabetes, heart conditions, hypertension, stroke, various cancers, and mental health issues. [1]. Childhood obesity,

marked by excessive fat accumulation, has a detrimental effect on a child's health and overall well-being. Its increasing prevalence among children makes it a major public health concern. The psychological burden on children can lead to harmful behaviors such as substance abuse, depression, and eating disorders. Common eating disorders linked to childhood obesity include anorexia and bulimia. Another critical concern is the heightened risk of high blood pressure and elevated cholesterol levels in the body[2,3]. Behavioral factors such as frequent consumption of unhealthy foods and sugar-sweetened beverages with low nutritional value play a much larger role. These high-calorie drinks, in particular, have been strongly linked to obesity in children due to their widespread availability and over consumption [4].

The prevalence of obesity is steadily increasing across all age groups, among both males and females, and across various ethnic and racial communities. Obesity typically develops when a person consumes more calories than they burn, often due to overeating combined with a lack of physical activity. The World obesity Federation estimates that by 2020 around 770 million grown-ups Globally were affected by obesity, and that figure is anticipated to exceed one billion by 2030 unless we act soon [5,6].

NEED OF THE STUDY

Childhood obesity is one of the most serious global public health challenges of the 21st century, affecting every country in the world. In just 40 times the number of academy- age children and adolescents with obesity has risen further than 10-fold, from 11 million to 124 million [7]. In India, the prevalence of childhood overweight increased significantly between 2010 and 2017 and is projected to reach 17.5% by 2030. National surveys show that the rate of overweight children rose from 1.6% in 2006 to 3.8% in 2020 and from 2.1% (2015–16) to 3.4% [8]. As of 2022, an estimated 37 million children under the age of five were overweight. Globally, more than 390 million children and adolescents aged 5 to 19 were classified as overweight, including 160 million with obesity. Overweight and obesity are diagnosed by calculating the Body Mass Index (BMI), which is a ratio of weight in kilograms to height in meters squared ($BMI = \text{weight [kg]} / \text{height}^2 [\text{m}^2]$). Although BMI is a

useful indicator of body fat, other measures like waist circumference can also help in diagnosing obesity. As of 2022, an estimated 37 million children under the age of five were overweight. Globally, more than 390 million children and adolescents aged 5 to 19 were classified as overweight, including 160 million with obesity. Overweight and obesity are diagnosed by calculating the Body Mass Index (BMI), which is a ratio of weight in kilograms to height in meters squared ($BMI = \text{weight [kg]} / \text{height}^2 [\text{m}^2]$). Although BMI is a useful indicator of body fat, other measures like waist circumference can also help in diagnosing obesity [9,10]. Globally, more than 300 million people are affected by obesity, and over 1.1 billion are overweight each year, according to WHO (2000). Obesity and overweight have become major public health issues in both developed and developing nations, with WHO describing obesity as the most severe non-infectious epidemic in history. Over the past two decades, the prevalence of childhood obesity has increased significantly across both developed and developing countries [11].

Objectives of the Study

1. To assess the childhood obesity and associated Risk factors of obesity among Schoolchildren.
2. To assess the knowledge of school children on obesity and its Complications through pre-test.
3. To administer and evaluate the Effectiveness of Video Assisted Teaching on knowledge on Obesity among school children through post-tests.
4. To find out the association between Socio Demographic variables of school children's with their BMI levels.
5. To find out the association between the pretest and post-test knowledge score with socio-demographic variables of school children with overweight and obesity.

Hypotheses

- H1-There is a correlation between the risk factors and prevalence of obesity among school going children at 0.05% level of significance
- H2-There is association with prevalence of obesity and selected demographic variables at 0.05 level of significance.
- H3-There is an association between the pre test and post test levels of Knowledge with socio demographic variables of

Overweight and Obese children at 0.05 level of significance.

METHODOLOGY

A quantitative approach was employed in the current investigation. Considering that the objectives of the research are to identify instances of obesity, examine the risk factors for obesity among a sample of students. Pre-test for Experiment Group One The post-test method was used. Obesity & its risk factors & the video assisted teaching program are independent variable. Knowledge level of school going children is dependent variable. In the present study 370 children, schools of

Deepika English Medium School, Rourkela through non-probability purposive sampling technique was used. The Body Mass Index (BMI), formerly known as the Quetelet Index, is a statistic used to demonstrate nutritional health. It is calculated by dividing the height in meters squared (kg/m²) by the weight in kilograms. When the reliability coefficient was computed, the result was $r = 0.89$, which suggests that the tool has a good degree of dependability. The study's data was collected from October 1, 2025, to April 28, 2025. The approach used in this research was non-probability purposive sampling.

RESULTS

Table 1: Frequency and Percentage Distribution of School Child

SL. No.	Demographic variables	Frequency (F)	Percentage (%)
1.	Age in year		
	a)10year	55	14.86%
	b)11year	108	29.19%
	c)12year	133	35.95%
	d)13year	71	19.19%
	e)14year	03	0.81%
2.	Gender		
	a)Male	205	55.41%
	b)Female	165	44.59%
3.	Parents occupation		
	a)Business	74	20.0%
	b)Employee	252	68.10%
	c)Agriculture	04	1.09%
	d)Daily Labor	07	1.89%
	e)No Job	33	8.92%
4.	Area of residence Gender		
	a)Rural	48	12.97%
	b)Peri-Urban	17	4.59%
	c)Urban	305	82.44%
5.	Number of children in family		
	a)1	124	33.51%
	b)2	186	50.27%
	c)>2	60	16.22%
6.	Type of food taken		
	a)vegetarian	59	15.94%
	b)non-vegetarian	130	35.15%
	c)mixed	181	48.91%
7.	Type of family		

	a)Nuclear	239	64.59%
	b)Joint	120	32.44%
	c)Joint extended	11	2.97%
8.	Like to play which type of game		
	a)Outdoor	112	30.27%
	b)Indoor	84	22.70%
	c)Both	174	47.03%
9.	Family history of obesity		
	a)Present	129	34.86%
	b)Not-present	241	65.14%

The table no. 1 revealed that 35.95% were in the 12-year age group, majority 55.41% of subjects were male, 68.10% of subjects have parents working as employee, 82.44% of subjects were from urban area, 50.27 % of subject were having 2 children in family,

48.91%of subjects have mixed diet, 64.59% of the participants belonged to a nuclear family, 47.03% of subjects play both types of games, 65.14% of subjects werehave no previous family history.

Table No. 2: Distribution of Subjects According to Classification of BMI

SL. No.	Score	Status	Score	Frequency	Percentage
1.	<19	Underweight	01	67	18.11%
2.	19-27	Healthy	02	231	62.43%
3.	27-30	Overweight	03	55	14.86%
4.	>30	Obesity	04	17	4.60%

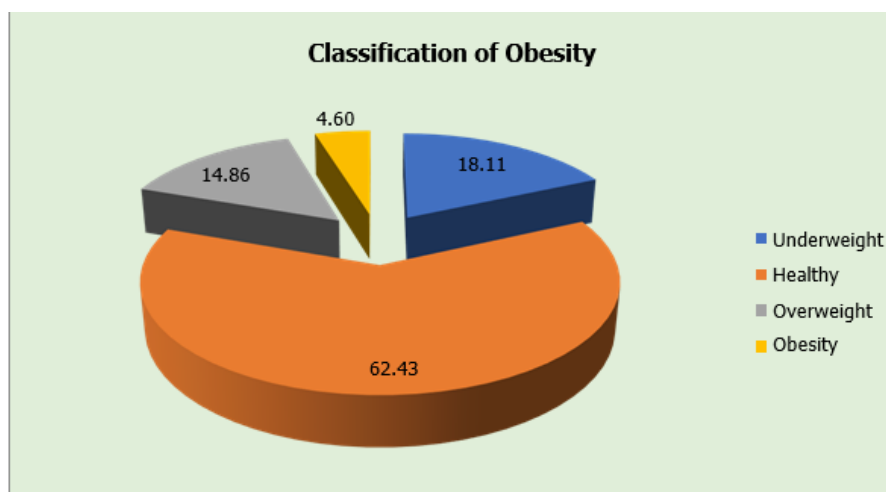


Fig.1: A Pie Diagram Showing the Percentage Distribution of Subjects According to the Classification of Obesity

Table -2 and Fig 1 show that regarding prevalence of obesity 18.11 of subjects were in below 19 score (Underweight), 62.43% of subjects were in 19-27 score (Healthy weight),

14.86% of subjects were in 27-30score (Over weight), 4.60% of subjects were in >30 score (Obesity).

Table No. 3: Distribution of Subjects According To Classification of Body Mass Index

SL. No.	School going children	Frequency	Percentage
1.	Underweight	67	18.10%
2.	Overweight	55	14.8%

3.	Obesity	17	4.59%
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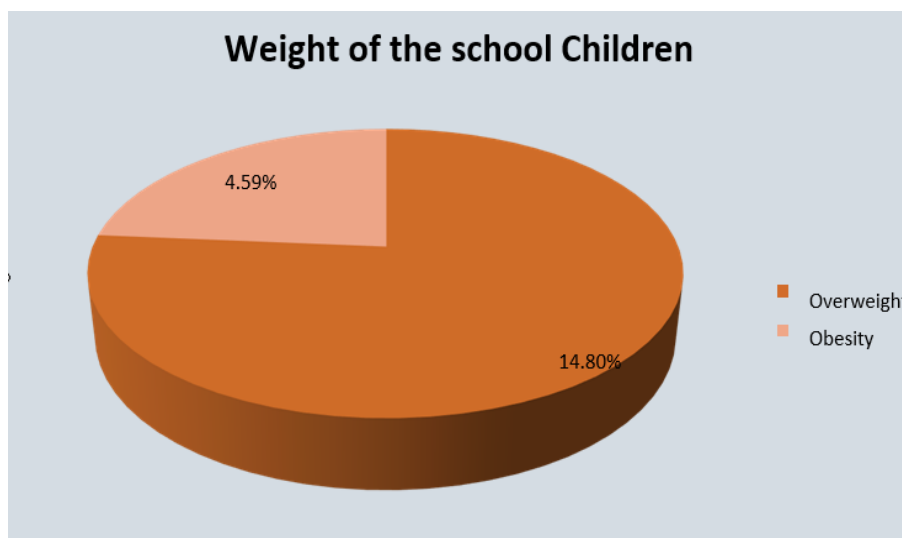


Fig: 2 A Pie Diagram Showing the Percentage Distribution of Subjects According to Prevalence of Over-Weight and Obesity

Table-3 and Fig.2 show that regarding prevalence of obesity, 14.80% of subjects were in over weight and 4.59% of subjects were in obesity.

Table 4: Distribution of Subjects on The Basis of Risk Factors

S. N.	RISK FACTORS	YES (f)	%	NO (f)	%
1.	Family history of obesity.	114	30.81%	256	69.19%
2.	Medication for long time.	69	18.65%	301	81.35%
3.	Going for play outside.	263	71.09%	107	28.91%
4.	Like to do daily exercise.	170	45.94%	200	54.06%
5.	Like to eat outside food (more than 3 times a week).	131	35.40%	239	64.60%
6.	Watching TV, mobile more than two hours in a day.(more than 2hr in a day).	214	57.83%	156	42.17%
7.	Like to eat junk food.(pizza, burger, noodles).	199	53.78%	171	46.22%
8.	Sugar, sweetened, beverages in take daily	141	38.11%	229	61.89%
9.	Having good sleep at night (at least 8hr at night)	283	76.48%	87	23.52%
10.	Mentally disturb due to family or any other problems	79	21.35%	291	78.65%

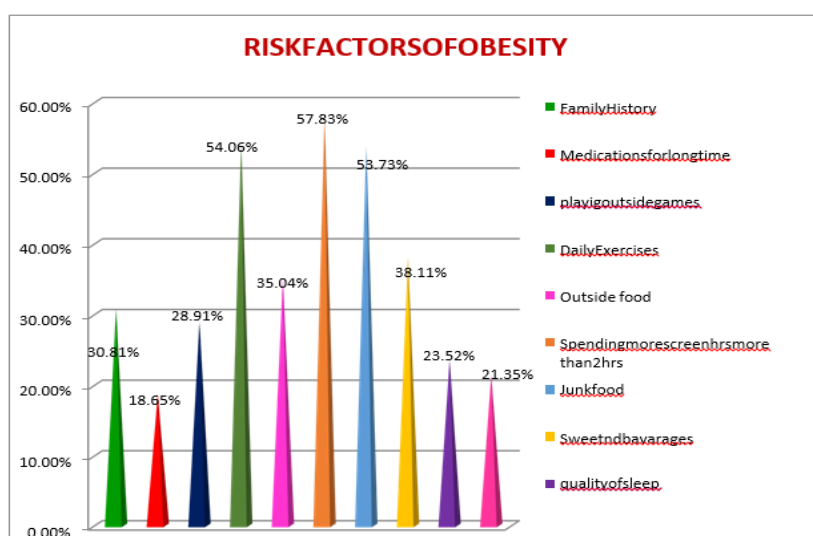


Table 4 and figure 3 shows that 30.8% having family history of obesity , 18.65%of children take medication for a long time, 28.91% of the children are not going to play outdoor game ,54.06 % children do not like to do daily exercise, 35.40% children like to eat outside

food, 57.83% watching T.V or mobile more than 2 hours on a day, 53.78 % like to take junk food, 38.11% children drink sugar, sweetened, beverages daily, 23.52% not having good sleep at night, 21.35%were mentally disturbed due to family problem.

Table 5: Assessing the Risk Factors among Overweight and Obese Children

S. N.	RISK FACTORS	YES (f)	%	NO (f)	%
1.	Family history of obesity.	43	59.72	29	40.27
2.	Medication for long time.	7	9.72	65	77.77
3.	Going for play outside.	61	84.72	11	15.27
4.	Like to do daily exercise.	34	47.22	38	52.77
5.	Like to eat outside food (more than 3 times a week).	23	32.94	49	68.05
6.	Watching TV, mobile more than two hours in a day. (more than 2hr in a day).	38	52.77	34	47.22
7.	Like to eat junk food.(pizza, burger, noodles).	34	47.22	38	52.77
8.	Sugar, sweetened, beverages intake daily	21	29.16	51	70.83
9.	Having goods leep at night (atleast 8hr at night)	59	81.94	13	18.05
10.	Mentally disturb due to family or any other problems	12	16.66	60	83.33

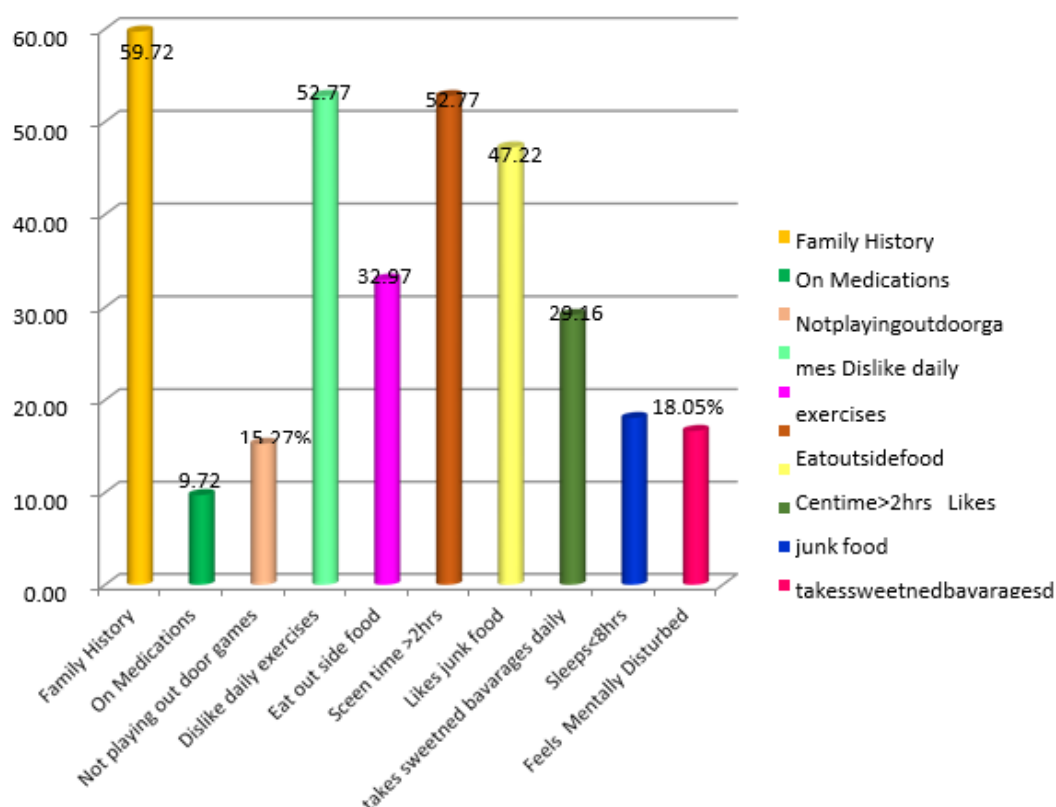


Table No – 7: shows the frequency and percentage of Risk factors among the overweight and Obese children. 43(59.72%)of overweight or obese children are having the Family History of obesity, 7(9.72%) are taking medications for long time, 11(15.27%) children's are not going to

play out door games, 38(52.77%)of children don't like to do daily exercises, 23(32.94%)of children like to eat out side food, 38(52.77%) of children watch T.V and mobile for more than 2hrs. 34(47.22%) of children like to take junk food. 21(29.16%)of children eat sugar and sweetened beverages daily, 13(18.05%)of

children are not having sleep for at least 8 hours daily, 12 (16.66%) of children are feeling mental disturbed due to family and other problems.

DISCUSSION

The present study revealed that among 370 schoolchildren, 55 (14.86%) were overweight and 17 (4.60%) were obese, indicating that 72 (19.46%) children were above the healthy BMI range. This finding shows that childhood overweight and obesity are important health concerns among school-going children in Rourkela. A recent systematic review and meta-analysis conducted among Indian schoolchildren reported that the pooled prevalence of obesity was 6.97%, showing that childhood obesity is increasing in India and requires early preventive measures. [12]. Similarly, Ranjani et al. reported that overweight and obesity among Indian children and adolescents are increasing across different socio-economic groups, along with the continuing problem of undernutrition. [13]

In the present study, important risk factors observed among overweight and obese children were family history of obesity (59.72%), screen exposure for more than two hours per day (52.78%), junk food consumption (47.22%), lack of daily exercise (52.78%), outside food intake (31.94%), and daily intake of sugar-sweetened beverages (29.17%). These findings are supported by Robinson et al., who reported that screen media exposure contributes to obesity among children and adolescents through increased eating during screen use, exposure to high-calorie food marketing, reduced physical activity, and disturbed sleep. [14]

The findings also support the importance of school-based health education. Shah et al., in the MARG intervention study among urban Asian Indian schoolchildren, found significant improvement in nutrition-related knowledge and behaviour after school-based health and nutrition education. [15] Similarly, Narayanan et al. reported that a school-based intervention using health mentors improved BMI percentile and blood pressure outcomes among children. [16] Therefore, the present study supports the usefulness of video-assisted teaching as an appropriate educational strategy to improve knowledge regarding obesity, healthy eating, physical activity, screen-time reduction, and prevention of obesity-related complications among schoolchildren.

CONCLUSION

The current study's findings led to the following deductions:

1. There is prevalence of obesity in selected schools of Rourkela.
2. Over weight is more common in children than childhood obesity.
3. Obesity and risk factors are significantly correlated.
4. There are a number of risk factors that lead to school-age children being obese.
5. The prevalence of obesity or risk factors are related.
6. There is a correlation between knowledge levels and sociodemographic factors.

Conflict of Interest: The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

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