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Childhood obesity: A serious curse for children

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Abstract
Statement of the Problem: A research study titled "A Comparative Study to Assess the Prevalence of Obesity and its Influencing Factors among Children in Selected Schools of Rural and Urban Areas of District Jalandhar, Punjab 2021".
Aim: The aim of the study is to compare the prevalence of obesity and its influencing factors among children in schools of rural and urban areas.
Objectives of the Study
1. To assess the prevalence of obesity and its influencing factors among children in selected schools of rural areas of District Jalandhar, Punjab.
2. To assess the prevalence of obesity and its influencing factors among children in selected schools of urban areas of District Jalandhar, Punjab.
3. To compares the prevalence of obesity and its influencing factors among children in selected schools of rural and urban areas of District Jalandhar, Punjab.
4. To find out the association between prevalence of obesity and its influencing factors among children with their selected socio-demographic variables in selected schools of rural and urban areas of District Jalandhar, Punjab.

Methodology: A Quantitative research approach was used and the research design adopted for the present study was non-experimental comparative research design. The target population for the study was children of age group10-15 years in selected schools of rural and urban areas of District Jalandhar, Punjab. Sample size was 200, data analysis was done based on objectives and assumption of the study.
Results: The result has shown that in selected schools of rural areas, out of 100 children 7 children were obese children in which the influencing factor of obesity was dietary pattern of children whereas in selected schools of urban areas, out of 100 children 14 children were obese in which Dietary pattern was the influencing factor of obesity in 9 children and activity was the influencing factor of obesity in 5 children.
Conclusion: The prevalence of obesity was more common among children in selected schools of urban areas as compared to children in selected schools of rural areas.

Keywords: Assess, effectiveness, video assisted teaching programme, knowledge, school going children, child sexual abuse

Introduction

"Our greatest happiness does not depend on the condition of life in which chance has placed us, but is always the result of a good conscience, good health, occupation and freedom in all just practices"

Nutrition can be defined as a science of food and relationship to health. It is concerned primarily with the part played by the nutrients in the body's growth, development and maintenance. We cannot visualize the good health without nutritious food and balanced diet. It includes intake of food, absorption, assimilation, biosynthesis, catabolism and excretion. Childhood is the most precious and memorable time in anyone's life. It is that stage of life which we enjoy in whatever way we like. In childhood, everyone should need to enjoy his or her life without any worry. It is that time in which one should have to take care of his diet, health and immunity. India is always ahead in non-communicable diseases burden as compared to other developing countries; now childhood obesity is a major non-communicable disease problem in this country. Obesity is an energy metabolism disorder that results in the excessive storage of fat and may also lead to physical and psychological problems. Childhood obesity is associated with a higher chance of developing obesity, premature death and disability in adulthood period. In addition to increased future risks, obese children experiences difficulties in breathing, increased risk of getting fractures, high blood pressure and early markers of cardiovascular disease, insulin resistance and psychological effects.

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People are also at risk of developing asthma symptoms, liver and gall bladder disease and a tendency to mature earlier (Nazir N, 2017) [6].

Need of the Study
According to WHO World Health Statistics Report 2012, globally one in six children is obese and nearly 2.8 million individuals die each other due to overweight and obesity. According to the WHO in 2008, over 1.4billion adults were overweight and more than half a billion were obese. Since the 1980s, obesity has drastically increased across all ages and socio-economic groups around the world. In the United States, the proportion of overweight children is 54.9% and obese children are 22.3%.
Balsekar M (2012) [26] Conducted a research study to assess the prevalence of obesity and overweight which was high (11%, 29%) among adolescents in Ludhiana, Punjab. The prevalence of obesity and overweight among children in Pune was 20% and 5.7% and in Delhi, the prevalence was 29% among school children of age group 4-18years.

Objectives of the study
1. To assess the prevalence of obesity and its influencing factors among children in selected schools of rural areas of District Jalandhar, Punjab.
2. To assess the prevalence of obesity and its influencing factors among children in selected schools of urban areas of District Jalandhar, Punjab.
3. To compares the prevalence of obesity and its influencing factors among children in selected schools of rural and urban areas of District Jalandhar, Punjab.
4. To find out the association between prevalence of obesity and its influencing factors among children with their selected socio-demographic variables in selected schools of rural and urban areas of District Jalandhar, Punjab.

Methodology
- **Research Approach:** Quantitative research approach was used.
- **Research design:** Non-experimental comparative research design was used.
- **Target population:** Children of age group 10-15 years.
- **Sampling technique:** Purposive sampling technique.
- **Sample size:** 200, 100 from selected schools of rural areas and 100 from selected schools of urban areas of District Jalandhar, Punjab.
- **Setting of the study:** Selected schools of rural and urban areas of District Jalandhar, Punjab.
  Data collection by Self-structured questionnaire.

Variables under study
Prevalence of obesity among children and its influencing factors.

Assumption
Description of tool
The tool consists of three parts which includes:

Part I: Socio-demographic variables
This part consists of items for obtaining information about subjects such as age in years, area of residence, religion, educational status of father, educational status of mother, occupation of father, occupation of mother, dietary pattern of family, type of family, family monthly income in rupees, previous information about obesity and influencing factors of obesity.

Part II: BMI (body mass index) assessment to assess the prevalence of obesity
Body Mass Index can be calculated by dividing the weight of children (in kg) to the height of children (in m^2).

Part III: Checklist to assess influencing factors of obesity in children
This part consists of checklist to assess influencing factors of obesity in children. There were total 24 items to assess influencing factors of obesity. Both positive and negative statements were present.

Content validity: The content of tool was validated by obtaining valuable opinion and suggestion from the experts from various fields such as paediatrics, medical, nursing, statistics and language experts.

Analysis and interpretation of data
Both inferential and descriptive statistics were used for the analysis.

Section I: Frequency and percentage distribution of socio-demographic variables among children in selected schools of rural area and urban area
Frequency and percentage distribution of samples according to age of the child (in years): Result revealed that in selected schools of rural areas, maximum 44(44%) children belonged to age-group 14-15 years, followed by 38 (38%) children belonged to age-group 12-13 years and minimum18 (18%) children belonged to age-group 10-11 years.
On the other hand in selected schools of urban area, maximum 41(41%) children belonged to age-group 14-15 years, followed by 30(30%) children belonged to age-group 10-11 years and minimum 29(29%) children belonged to age-group 12-13 years.

Frequency and percentage distribution of samples according to Class of children: Result revealed that in selected schools of rural areas, maximum 27(27%) children were from 7th class, followed by 20(20%) children were from 8th class, 17(17%) children were from 10th class, 16(16%) children were from 9th class and minimum 10(10%) children in each 5th and 6th class.
On the other hand in selected schools of urban areas, maximum 20(20%) children were from 8th class, followed by 19(19%) children were from 9th class, 17(17%) children were from 7th class, 13(13%) children in each 5th and 10th class and minimum 8(8%) children were from 6th class.

Frequency and percentage distribution of samples according to Gender of children: Result revealed that in selected schools of rural areas, maximum 54(54%) of children were male and minimum 46(46%) children were female.
On the other hand in selected schools of urban areas, maximum 51(51%) children were female and minimum 49(49%) of children were male.

Frequency and percentage distribution of samples

according to Educational status of mother of children: Result revealed that in selected schools of rural areas, maximum 37(37%) mothers had secondary education, followed by 21(21%) mothers had primary education, 19(19%) mothers had higher secondary education, 18(18%) mothers had no formal education and minimum 5(5%) mothers of children had education graduate and above.

On the other hand selected schools of urban areas, maximum 33(33%) mothers had higher secondary education, followed by 30(30%) mothers had education graduation and above, 20(20%) mothers had secondary education, 9(9%) mothers of children had no formal education and minimum 8(8%) mothers had primary education.

Frequency and percentage distribution of samples according to Educational status of father of children: Result revealed that in selected schools of rural areas, maximum 35(35%) fathers had higher secondary education, followed by 29(29%) fathers had secondary education, 19(19%) fathers had primary education, 11(11%) fathers had no formal education and minimum 6(6%) fathers of children had education graduation and above.

On the other hand in selected schools of urban areas, maximum 39(39%) fathers had higher secondary education, followed by 32(32%) fathers had education graduation and above, 13(13%) fathers had primary and 13(13%) fathers had secondary education and minimum 3(3%) fathers of children had no formal education.

Frequency and percentage distribution of samples according to Occupation of mother of children: Result revealed that in selected schools of rural areas, maximum 79(79%) mothers were home-makers, followed by 16(16%) mothers were self-employed and minimum 5(5%) mothers were working in private sector. No one mother of children was working in government sector.

On the other and in selected schools of urban areas, maximum 42(42%) mothers were home-makers, followed by 29(29%) mothers working in private sector, 20(20%) mothers were self-employed and minimum 9(9%) mothers of children were working in government sector.

Frequency and percentage distribution of samples according to Occupation of father of children: Result revealed that in selected schools of rural areas, maximum 51(51%) fathers were self-employed, followed by 26(26%) fathers were working in private sector, 22(22%) fathers were farmers and minimum 1(1%) fathers were working in government sector. No one father of children was unemployed.

On the other hand in selected schools of urban areas, maximum 41(41%) fathers were working in private sector, followed by 33(33%) fathers were self-employed, 15(15%) fathers were working in government sector, 9(9%) fathers were farmers and minimum 2(2%) fathers of children were unemployed.

Frequency and percentage distribution of samples according to Dietary pattern of family of children: Result revealed that in selected schools of rural areas, maximum 65(65%) families were non-vegetarian and minimum 35(35%) families of children were vegetarian. On the other

hand in selected schools of urban areas, maximum 56(56%) families were non-vegetarian and minimum 44(44%) families of children were vegetarian.

Frequency and percentage distribution of samples according to Type of family of children: Result revealed that in selected schools of rural areas, maximum 55(55%) children had nuclear family and minimum 45(45%) children had joint family.

On the other hand in selected schools of urban areas, maximum 63(63%) children had nuclear family and minimum 37(37%) children had joint family.

Frequency and percentage distribution of samples according to Religion of children: Result revealed that in selected schools of rural areas, maximum 65(65%) children were Hindu, followed by 20(20%) children were Sikh, 7(7%) children belonged to religion other than Hindu, Sikh, Muslim and Christian and minimum 4(4%) children belonged to each Muslim and Christian religion.

On the other hand in selected schools of urban areas, maximum 43(43%) children were Hindu, followed by 29(29%) children were Sikh, 13(13%) children were Christian, 10(10%) children belonged to religion other than Hindu, Sikh, Muslim and Christian and minimum 5(5%) children were Muslim.

Frequency and percentage distribution of samples according to Monthly family income of children: Result revealed that in selected schools of rural areas, maximum 37(37%) children had monthly family income 20,001-30,000 rupees, followed by 31(31%) children had monthly family income 10,001-20,000 rupees, 18(18%) children had monthly family income of more than or equal to 30,001 rupees and minimum 14(14%) children had monthly family income less than or equal to 10,000 rupees.

On the other hand in selected schools of urban areas, maximum 43(43%) children had monthly family income 20,001-30,000 rupees, followed by 40(40%) children had monthly family income of more than or equal to 30,001 rupees, 11(11%) children had monthly family income 10,001-20,000 rupees and minimum 6(6%) children had monthly family income less than or equal to 10,000 rupees.

Frequency and percentage distribution of samples according to Area of residence of children: Result revealed that in selected schools of rural areas, 100(100%) children were taken from rural area and on the other hand in selected schools of urban areas, 100(100%) children were taken from urban area.

Frequency and percentage distribution of samples according to Previous source of information of children: Result revealed that in selected schools of rural areas, maximum 53(53%) children had taken information from family, followed by 41(41%) children had taken information from teachers and minimum 3(3%) children had taken information from health personnel, 3(3%) children had taken information from mass media. No one had taken information from friends.

On the other hand in selected schools of urban areas, maximum 51(51%) of children had taken information from family, followed by 28(28%) children had taken information

from teachers,11(11%) children had taken information from mass media, 9(9%) children had taken information from health personnel and minimum 1(1%) children had taken information from friends.

Section II: Description of samples according to prevalence of obesity among children in selected schools of rural area

Table 1: Frequency and percentage distribution of prevalence of obesity among children in selected schools of rural area

Weight status	F	%
Underweight	24	24%
Normal	46	46%
Overweight	23	23%
Obesity	7	7%

Result revealed that out of 100 children in selected schools of rural area, maximum 46(46%) children were having normal weight, followed by 24(24%) children were underweight, 23(23%) children were overweight and minimum 7(7%) children were obese.

Table 2: Frequency and percentage of influencing factors of obesity among children in selected schools of rural areas, N=100

	Influencing factors of obesity	(F)	(%)
	Diet		
1.	Do you take milk daily?	67	67%
2.	Do you consume green leafy vegetables?	90	90%
3.	* Do you consume junk food?	23	23%
4.	Do you consume fruits?	88	88%
5.	* Do you consume candies?	39	39%
6.	* Do you consume canned drinks?	29	29%
7.	Do you like non-vegetarian food?	65	65%
8.	* Do you consume baked food items?	30	30%
9.	* Do you eat more than hunger?	78	78%
10.	Do you take egg daily?	9	9%
11.	Do you consume meals at appropriate times?	62	62%
12.	* Do you follow any taboo related to dietary habits?	67	67%
	Activity		
13.	Do you play outdoor games?	71	71%
14.	* Do you play video games?	48	48%
15.	Do you perform daily activities on your own?	98	98%
16.	* Do you spend more time on the computer?	81	81%
17.	* Do you have a study workload?	22	22%
18.	Does anyone in the family encourage you for physical activity?	86	86%
	Sleep and Health		
19.	Do you sleep 8-10 hours per day?	57	57%
20.	* Do you use a mobile phone before sleeping?	40	40%
21.	* Do you have difficulty in sleeping?	74	74%
22.	* Do you have breathing difficulty while sleeping?	91	91%
23.	* Do you have any health problems?	90	90%
24.	* Do you take any medicine?	93	93%
Maximum score: 24, Minimum score: 0			

Result revealed that in selected schools of rural areas, out of 100 children 7 children were obese children in which the influencing factor of obesity was dietary pattern of children.

Section III: Description of samples according to prevalence of obesity among children in selected schools of urban area

Table 3: Frequency and percentage distribution of prevalence of obesity among children in selected schools of urban area

Weight Status	F	%
Underweight	15	15%
Normal	32	32%
Overweight	39	39%
Obesity	14	14%

Result revealed that out of 100 children in selected schools of urban area, maximum 39(39%) children were overweight, followed by 32(32%) children were having normal weight, 15(15%) children were underweight and minimum 14(14%) children were obese.

Table 4: Frequency and percentage distribution of influencing factors of obesity among children in selected schools of urban area, N=100

Category	Question	(F)	(%)
	Diet		
1.	Do you take milk daily?	53	53%
2.	Do you consume green leafy vegetables?	90	90%
3.	* Do you consume junk food?	34	34%
4.	Do you consume fruits?	89	89%
5.	* Do you consume candies?	31	31%
6.	Do you consume canned drinks?	33	33%
7.	Do you like non-vegetarian food?	56	56%
8.	* Do you consume baked food items?	38	38%
9.	* Do you eat more than hunger?	57	57%
10.	Do you take egg daily?	14	14%
11.	Do you consume meals at appropriate times?	61	61%
12.	Do you follow any taboo related to dietary habits?	59	59%
	Activity		
13.	Do you play outdoor games?	57	57%
14.	* Do you play video games?	42	42%
15.	Do you perform daily activities on your own?	84	84%
16.	Do you spend more time on the computer?	48	48%
17.	* Do you have a study workload?	34	34%
18.	Does anyone in the family encourage you for physical activity?	78	78%
	Sleep and Health		
19.	Do you sleep 8-10 hours per day?	54	54%
20.	* Do you use a mobile phone before sleeping?	51	51%
21.	* Do you have difficulty in sleeping?	77	77%
22.	* Do you have breathing difficulty while sleeping?	95	95%
23.	* Do you have any health problems?	92	92%
24.	* Do you take any medicine?	92	92%
Maximum score: 24, Minimum score: 0			

Result revealed that in selected schools of rural areas, out of 100 children 7 children were obese children in which the influencing factor of obesity was dietary pattern of children.

Table 5: Frequency and percentage distribution of comparison of prevalence of obesity among children in selected schools of rural area and urban area, N=200

Grade	Rural area, N=100		Urban area, N=100	
	F	%	F	%
Underweight	24	24%	15	15%
Normal	46	46%	32	32%
Overweight	23	23%	39	39%
Obesity	7	7%	14	14%

Result reveals the frequency and distribution of comparison of prevalence of obesity among children in selected schools of rural area and urban area. In the present study, out of 100 children in selected schools of rural area, maximum 46(46%) children were having normal weight, followed by 24(24%) children were underweight, 23(23%) children were overweight and minimum 7(7%) children were obese whereas out of 100 children in selected schools of urban area, maximum 39(39%) children were overweight, followed by 32(32%) children were having normal weight, 15(15%) children were underweight and minimum 14(14%) children were obese.

Table 6: Frequency and percentage of influencing factors of obesity among children in selected schools of rural and urban area. N=200

Category	Question	Rural, N=100 (%)	Urban, N=100 (%)
	Diet		
1.	Do you take milk daily?	67%	53%
2.	Do you consume green leafy vegetables?	90%	90%
3.	* Do you consume junk food?	23%	34%
4.	Do you consume fruits?	88%	89%
5.	* Do you consume candies?	39%	31%
6.	* Do you consume canned drinks?	29%	33%
7.	Do you like non-vegetarian food?	65%	56%
8.	*Do you consume baked food items?	30%	38%
9.	* Do you eat more than hunger?	78%	57%
10.	Do you take egg daily?	9%	14%
11.	Do you consume meals at appropriate times?	62%	61%
12.	* Do you follow any taboo related to dietary habits?	67%	59%

	Activity		
	Activity		
13.	Do you play outdoor games?	71%	57%
14.	* Do you play video games?	48%	42%
15.	Do you perform daily activities on your own?	98%	84%
16.	* Do you spend more time on the computer?	81%	48%
17.	* Do you have a study workload?	22%	34%
18.	Does anyone in the family encourage you for physical activity?	86%	78%
	Sleep and Health		
19	Do you sleep 8-10 hours per day?	57%	54%
20.	* Do you use a mobile phone before sleeping?	40%	51%
21.	* Do you have difficulty in sleeping?	74%	77%
22.	* Do you have breathing difficulty while sleeping?	91%	95%
23.	* Do you have any health problems?	90%	92%
24.	* Do you take any medicine?	93%	92%
Maximum score: 24, Minimum score: 0			

Table 7: Comparison of mean and SD regarding prevalence of obesity and its influencing factors among children in selected schools of rural and urban area, N=200

Prevalence	N	Mean	SD	Unpaired T-Test	P-Value	DF	Table Value at 0.05
Rural	100	23.03	5.207	2.894	0.004	198	1.972*
Urban	100	25.22	5.478				
Maximum=24, Minimum=0							

Result reveals the comparison of mean and SD regarding prevalence of obesity and its influencing factors among children in selected schools of rural and urban area in which mean score of rural area was 23.03 and S.D. was 5.207 whereas the mean score of urban area was 25.22 and S.D. was 5.478. Unpaired T-test was applied. The value was found out to be 2.894 which was more than table value 1.972 at 0.05 level of significance. Hence it was concluded that there was statistically significant association of prevalence of obesity among children in selected schools of rural and urban area.

Table 8: Association between the prevalence of obesity among children with age of child (in years)

	Weight Status								DF	χ^2
Age of Child (In years)	Under weight		Normal		Over weight		Obesity			
	F	%	F	%	F	%	F	%		
Rural Area										
a) 10-11	6	6%	6	6%	5	5%	1	1%		
b) 12-13	8	8%	21	21%	8	8%	1	1%	6	4.762^{NS}
c) 14-15	10	10%	19	19%	10	10%	5	5%		
Urban Area										
a) 10-11	2	2%	12	12%	12	12%	4	4%		
b) 12-13	7	7%	8	8%	10	10%	4	4%	6	4.124^{NS}
c) 14-15	6	6%	12	12%	17	17%	6	6%		

*Significant at *p*<0.05 level, NS=Not Significant, * = Significant

Table 9: Association between the prevalence of obesity among children with class of child.

	Weight Status								DF	χ^2
Class of Child	Underweight		Normal		Overweight		Obesity			
	F	%	F	%	F	%	F	%		
Rural Area										
a) 5th	2	2%	6	6%	2	2%	0	0%		
b) 6th	3	3%	3	3%	3	3%	1	1%		
c) 7th	5	5%	15	15%	6	6%	1	1%	15	11.632^{NS}
d) 8th	6	6%	11	11%	2	2%	1	1%		
e) 9th	5	5%	6	6%	4	4%	1	1%		
f) 10th	3	3%	5	5%	6	6%	3	3%		
Urban Area										
a) 5th	2	2%	6	6%	4	4%	1	1%		
b) 6th	2	2%	3	3%	10	10%	3	3%		
c) 7th	1	1%	6	6%	9	9%	1	1%	15	21.842^{NS}
d) 8th	6	6%	5	5%	4	4%	5	5%		
e) 9th	4	4%	4	4%	9	9%	2	2%		
f) 10th	0	0%	8	8%	3	3%	2	2%		

*Significant at *p*<0.05 level, NS=Not Significant, * = Significant

Table 10: Association between the prevalence of obesity among children with gender of child

Gender		Weight Status								DF	χ^2
		Underweight		Normal		Overweight		Obesity			
		F	%	F	%	F	%	F	%		
Rural Area											
a)	Male	15	15	26	26	6	6	7	7	3	13.993*
b)	Female	9	9	20	20	17	17	0	0		
Urban Area											
a)	Male	11	11	16	16	15	15	7	7	3	5.306^NS
b)	Female	4	4	16	16	24	24	7	7		

*Significant at $p<0.05$ level, NS=Not Significant, * = Significant

Table 11: Association between the prevalence of obesity among children with educational status of mother of child

Educational status of mother		Weight Status								DF	χ^2
		Underweight		Normal		Overweight		Obesity			
		F	%	F	%	F	%	F	%		
Rural Area											
a)	No formal education	4	4	8	8	6	6	0	0	12	9.964^NS
b)	Primary	5	5	8	8	6	6	2	2		
c)	Secondary	6	6	20	20	8	8	3	3		
d)	Higher	6	6	8	8	3	3	2	2		
e)	Secondary										
f)	Graduate and above	3	3	2	2	0	0	0	0		
Urban Area											
a)	No formal education	0	0	6	6	1	1	2	2	12	17.047^NS
b)	Primary	0	0	4	4	4	4	0	0		
c)	Secondary	5	5	5	5	8	8	2	2		
d)	Higher Secondary	7	7	8	8	15	15	3	3		
e)	Graduate and above	3	3	2	2	0	0	0	0		

*Significant at $p<0.05$ level, NS=Not Significant, * = Significant

Table 12: Association between the prevalence of obesity among children with educational status of father of child

Educational status of father		Weight Status								DF	χ^2
		Underweight		Normal		Overweight		Obesity			
		F	%	F	%	F	%	F	%		
Rural Area											
a)	No formal education	5	5	2	2	3	3	1	1	12	7.345^NS
b)	Primary	5	5	9	9	3	3	2	2		
c)	Secondary	6	6	15	15	6	6	2	2		
d)	Higher Secondary	7	7	16	16	10	10	2	2		
e)	Graduate and above	1	1	4	4	1	1	0	0		
Urban Area											
a)	No formal education	0	0	1	1	2	2	0	0	12	15.414^NS
b)	Primary	0	0	9	9	2	2	2	2		
c)	Secondary	2	2	5	5	5	5	1	1		
d)	Higher Secondary	7	7	7	7	18	18	7	7		
e)	Graduate and above	6	6	10	10	12	12	4	4		

*Significant at $p<0.05$ level, NS=Not Significant, * = Significant

Table 13: Association between the prevalence of obesity among children with occupation of mother of child

Occupation of mother		Weight Status								DF	χ^2
		Underweight		Normal		Overweight		Obesity			
		F	%	F	%	F	%	F	%		
Rural Area											
a)	Government sector	0	0	0	0	0	0	0	0	6	5.356^NS
b)	Private sector	0	0	3	3	2	2	0	0		
c)	Home-Maker	20	20	38	38	15	15	6	6		
d)	Self-employed	4	4	5	5	6	6	1	1		
Urban Area											
a)	Government sector	2	2	4	4	1	1	2	2	9	7.269^NS
b)	Private sector	4	4	7	7	12	12	6	6		
c)	Home-Maker	5	5	15	15	19	19	3	3		
d)	Self-employed	4	4	6	6	7	7	3	3		

*Significant at $p<0.05$ level, NS=Not Significant, * = Significant

Table 14: Association between the prevalence of obesity among children with occupation of father of child, N=200

Occupation of father	Underweight		Normal		Overweight		Obesity		DF	χ^2
	F	%	F	%	F	%	F	%		
Rural Area										
a) Government sector	0	0	1	1	0	0	0	0	9	6.337[NS]
b) Private sector	3	3	16	16	5	5	2	2		
c) Farming	7	7	8	8	6	6	1	1		
d) Self-employed	14	14	21	21	12	12	4	4		
e) Unemployed	0	0	0	0	0	0	0	0		
Urban Area										
a) Government sector	5	5	5	5	3	3	2	2	12	17.388[NS]
b) Private sector	6	6	8	8	20	20	7	7		
c) Farming	0	0	5	5	4	4	0	0		
d) Self-employed	4	4	14	14	10	10	5	5		
e) Unemployed	0	0	0	0	2	2	0	0		

Significant at $p<0.05$ level, NS=Not Significant, * = Significant

Table 15: Association between the prevalence of obesity among children with dietary pattern of family of child, N=200

Dietary pattern of family	Underweight		Normal		Overweight		Obesity		DF	χ^2
	F	%	F	%	F	%	F	%		
Rural Area										
a) Vegetarian	9	9	17	17	5	5	4	4	3	3.430[NS]
b) Non-Vegetarian	15	15	29	29	18	18	3	3		
Urban Area										
a) Vegetarian	7	7	16	16	16	16	5	5	3	1.041[NS]
b) Non-Vegetarian	8	8	16	16	23	23	9	9		

*Significant at $p<0.05$ level, NS=Not Significant, * = Significant

Table 16: Association between the prevalence of obesity among children with type of family of child, N=200

Type of family	Underweight		Normal		Overweight		Obesity		DF	χ^2
	F	%	F	%	F	%	F	%		
Rural Area										
Nuclear family	16	16	24	24	11	11	4	4	3	1.960[NS]
Joint family	8	8	22	22	12	12	3	3		
Urban Area										
Nuclear family	1	1	18	18	27	27	7	7	3	2.977[NS]
Joint family	4	4	14	14	12	12	7	7		

*Significant at $p<0.05$ level, NS=Not Significant, * = Significant

Table 17: Association between the prevalence of obesity among children with religion of child, N=200

Type of Family	Underweight		Normal		Overweight		Obesity		DF	χ^2
	F	%	F	%	F	%	F	%		
Rural Area										
Hindu	14	14%	31	31%	15%	15%	5%	5%	12	9.221[NS]
Sikh	6	6%	6	6%	6%	6%	2%	2%		
Muslim	2	2%	1	1%	1%	1%	0%	0%		
Christian	1	1%	2	2%	1%	1%	0%	0%		
Any Other	1	1%	3	3%	0%	0%	0%	0%		
Urban Area										
Hindu	5	5%	16%	16%	18%	18%	4%	4%	12	12.310[NS]
Sikh	4	4%	6%	6%	15%	15%	4%	4%		
Muslim	1	1%	1%	1%	1%	1%	2%	2%		
Christian	2	2%	6%	6%	2%	2%	3%	3%		
Any Other	3	3%	3	3%	3%	3%	1%	1%		

Table 18: Association of prevalence of obesity among children with monthly income of family (in Rupees) of child, N=200

Monthly income of family (in Rupees)	Weight Status								DF	χ^2
	Underweight		Normal		Overweight		Obesity			
	F	%	F	%	F	%	F	%		
Rural Area										
a) ≤10,000	3	3	7	7	2	2	2	2	9	15.579[NS]
b) 10,001-20,000	9	9	16	16	4	4		2		
c) 20,001-30,000	7	7	12	12	16	16	2	2		
d) ≥ 30,001	5	5	11	11	1	1	2	1		
Urban Area										
a) ≤10,000	0	0	3	3	3	3	0	0	9	7.542[NS]
b) 10,001-20,000	3	3	4	4	4	4	3	3		
c) 20,001-30,000	7	7	15	15	15	15	6	6		
d) ≥ 30,001	5	5	10	10	17	17	8	8		

Table 19: Association of prevalence of obesity among children with source of information of obesity, N=200

Area of residence:	Weight Status								DF	χ^2
	Underweight		Normal		Overweight		Obesity			
	F	%	F	%	F	%	F	%		
Rural Area										
a) Rural Area	24	24	46	46	23	23	7	7		NA
b) Urban Area	0	0	0	0	0	0	0	0		
Urban Area										
a) Rural Area	0	0	0	0	0	0	0	0		NA
b) Urban Area	15	15	32	32	39	39	14	14		

*Significant at $p<0.05$ level, NS=Not Significant, * = Significant

Table 20: Item-wise analysis of influencing factors of obesity among children in selected schools of rural and urban area, N=200

Influencing factors of obesity %	Rural, N=100	Urban, N=100
Diet		
Do you take milk daily?	67%	53%
Do you consume green leafy vegetables?	90%	90%
*Do you consume junk food?	23%	34%
Do you consume fruits?	88%	89%
*Do you consume candies?	39%	31%
*Do you consume canned drinks?	29%	33%
Do you like non-vegetarian food?	65%	56%
*Do you consume baked food items?	30%	38%
*Do you eat more than hunger?	78%	57%
Do you take egg daily?	9%	14%
Do you consume meal at appropriate time?	62%	61%
*Do you follow any taboo related to dietary habits?	67%	59%
Activity		
Do you play outdoor games?	71%	57%
*Do you play video games?	48%	42%
Do you perform daily activities by own?	98%	84%
*Do you spend more time on computer?	81%	48%
*Do you have study workload?	22%	34%
Does anyone in family encourage you for physical activity?	86%	78%
Sleep and Health		
Do you sleep 8-10 hours per day?	57%	54%
*Do you use mobile phone before sleeping?	40%	51%
*Do you have difficulty in sleeping?	74%	77%
*Do you have breathing difficulty while sleeping?	91%	95%
*Do you have any health problem?	90%	92%
*Do you take any medicine?	93%	92%

There are two statements related to influencing factors of obesity

- In positive statement, "yes" response carries a "one" mark.
- "*" Indicates negative statement in which "no" response carries a "zero" mark.

This table depicts the distribution of the influencing factors of obesity among children in selected schools of rural and urban areas.

In first factor, majority 67% children were taking milk daily in selected schools of rural area whereas 53% children were taking milk daily in selected schools of urban area.

In second factor, majority 90% children were consuming green leafy vegetables in both selected schools of rural and urban areas.

In third factor, majority 23% children were consuming junk food in selected schools of rural area whereas majority 34% children were consuming junk food in selected schools of urban area.

In fourth factor, majority, 88% children were consuming fruits in selected schools of rural area whereas majority 89% children were consuming fruits in selected schools of urban group.

In fifth factor, majority 39% children were consuming candies in selected schools of rural area whereas majority 31% children were consuming candies in selected schools of urban area.

In sixth factor, majority 29% children were consuming canned drinks in selected schools of rural area whereas majority 33% children were consuming canned drinks in selected schools of urban area.

Conclusion

The result of the present study reveals that out of 100 children in selected schools of rural area, maximum 46 (46%) children were having normal weight followed by 24 (24%) children were underweight, 23 (23%) children were overweight and minimum 7 (7%) children were detected as obese whereas out of 100 children in selected schools of urban area, maximum 39 (39%) children were overweight followed by 32 (32%) children were having normal weight, 15 (15%) children were underweight and minimum 14 (14%) children were detected as obese.

The prevalence of obesity was more common among children in selected schools of urban areas as compared to children in selected schools of rural areas.

Conflict of Interest

Not available

Financial Support

Not available

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