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RISK FACTORS FOR OVERWEIGHT AND OBESITY AMONG SCHOOL GOING CHILDREN [6-18 YEARS] IN RAJASTHAN

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Abstract

Background: To study the risk factor of obesity and overweight among school children in Rajasthan

Methods: This study was conducted in Department of Pediatrics in collaboration with department of Radiology, Mahatma Gandhi Medical College and Hospital of Mahatma Gandhi University of Medical Sciences and Technology, RIICO Industrial Area, Sitapura, Jaipur (Rajasthan) from January 2018 to June 2019.

Results: Out of total 70 overweight and obese candidates, 28 (40 %) candidates watched TV less than 1 hours while remaining 42 (60 %) watched TV more than 2 hours. Statistical significance was found between BMI and hours of watching TV (p = 0.001).According to outdoor activity 52 (74.3%) candidates have outdoor activity less than 1 hour while remaining 18 (25.7%) spent more than 1 hours for outdoor activity. Prevalence of overweight and obese was more in urban school in comparison to rural school because of less outdoor activity and intake of frequent fast food and prolonged TV watching.

Conclusions: Duration of physical activity, consumption of fast food and watching TV had a significant association with BMI.

Keywords: Childhood obesity, overweight, school children

Introduction

Obesity and overweight constitute a major public health problem, and their prevalence is increasing worldwide at an alarming rate in both developing and developed countries. WHO has described obesity as the worst non-infectious epidemic in history.[1] During the past two decades, the prevalence of overweight and obesity in many developed and developing countries has also increased rapidly in children, largely due to growing urbanization and nutrition transition.[2] The nutrition transition is generally associated with increased consumption of energy-dense foods that are low in fibre and high in sugar and of sweetened drinks as well as a decrease in physical activity and a more sedentary lifestyle.[3]

Obesity is potentially serious because of its impact on the physical and psychological health of children and adolescents. It is strongly associated with numerous deleterious health issues.[4] Metabolic complications associated with obesity in childhood greatly increase the risks for type 2 diabetes, hypertension, chronic inflammation and cardiovascular diseases. [5] Many risk factors contribute to overweight and obesity, but they include genetic, biological, social and environmental factors, which affect weight gain through the mediators of energy intake and energy expenditure. [6]

Material and Methods

This study was conducted in Department of Pediatrics in collaboration with department of Radiology, Mahatma Gandhi Medical College and Hospital of Mahatma Gandhi University of Medical Sciences and Technology, RIICO Industrial Area, Sitapura, Jaipur (Rajasthan) from January 2018 to June 2019.

Study Design:

This was School based cross-sectional study

Study period

The study was conducted from January 2018 –June 2019

Study population

School based cross-sectional study conducted in urban and rural school children 6-18 year's age group in Jaipur.

Inclusion criteria:

- Boys and girls in the age group of 6-18 years
- Consent of school authorities/ parents.

Exclusion Criteria

- All children having chronic illness like liver disorder, hypertension, diabetes etc.
- Children less than 6 years of age

Patients for whom the parent/guardian didn't give informed consent

Methodology

The study was questionnaire based. A detailed proforma of demographic profile, dietary habits, physical activity, duration of TV watching, socioeconomic status of family and family history of diabetes, hypertension and obesity were recorded. The study was approved by the hospital's Institutional Review Board and consent was obtained by the school management, parents and the students prior to study. All the anthropometric measurements were taken in school premises.

The anthropometric measurements of 6-18 years old children were recorded using standardized procedures. Body weight was recorded in kilograms using a standard digital weighing machine and height was measured by using a portable stadiometer with sensitivity of 0.5 centimeters. Body mass index (BMI) was derived by dividing the subject's weight by the square of his or her height, typically expressed in metric units. Their BMI was calculated and plotted over BMI CDC growth chart and was analyzed.

BMI = Weight (in kilogram)/ height (in meters)^2.

We applied the cutoff points standardized by the centers for disease control and prevention (CDC) growth chart in identifying the age and gender specific cutoff points for the BMI with the age ranging from 2 years to 20 years for the labeling of overweight and obesity among the included subjects.

Table 1:

S.No.	Body condition	Percentile
1.	Underweight	< 5
2.	Healthy weight	≥ 5 &<85
3.	Overweight	≥ 85 &<95
4.	Obesity	≥95

Student with BMI > 85th percentile were enrolled in our study for further investigation to found out prevalence of NAFLD in overweight and obese children. Children with BMI above 95thpercentile were considered as obese, those above85th percentile and below the 95th percentile as overweight.

Statistical Methods:

All the calculated data were tabulated and statically analyzed using SPSS (version 17.1) software. Interpretation made by using Mean, Median, Standard Deviation and Proportion. Appropriate tests of significance were applied to all results.

Results

Table 2: Factors associated with the risk of obesity/overweight

Variables	Activity duration	Overweight/obese		Non Obese		P value
		urban	rural	Urban	Rural	
Fast food	Infrequent	15	11	370	250	0.0001
	Frequent	40	4	114	55	
Watching TV	< 1 hour	15	13	305	210	0.0001
	>1 hours	40	2	179	95	
Outdoor activity	< 1 hour	50	2	310	105	0.0001
	>1 hours	5	13	174	200	
Total		55	15	484	305	

In our study, out of 70 overweight and obese candidates, 26 (72.9%) consume fast food infrequently while 44 (27.1%) consume frequently. This was found to be statistically significant (p = 0.001)

In our study, out of total 70 overweight and obese candidates 28 (40 %) candidates watched TV less than 1 hours while remaining 42 (60 %) watched TV more than 2 hours. Statistical significance was found between BMI and hours of watching TV (p = 0.001).

According to outdoor activity 52 (74.3%) candidates have outdoor activity less than 1 hour while remaining 18 (25.7%) spent more than 1 hours for outdoor activity.

Prevalence of overweight and obese was more in urban school in comparison to rural school because of less outdoor activity and intake of frequent fast food and prolonged TV watching.

Table 3: Mean and SD of BMI in male and female

Area	Sex		Overweight		Obese	
			BMI	Percentile	BMI	Percentile
Urban	Male (36)	Mean	23.89	89.95	26.47	96.98
		S.D.	2.33	2.84	5.37	1.60
	Female (19)	Mean	22.62	89.04	28.49	96.50
		S.D.	2.98	3.15	1.79	1.51
	Total (55)	Mean	23.48	89.66	27.24	96.80
		S.D.	2.58	2.93	4.41	1.55
Rural	Male (9)	Mean	20.16	89.70	25.33	97.40
		S.D.	1.38	2.67	4.20	1.87
	Female (6)	Mean	23.74	89.86	25.50	97.60
		S.D.	2.50	1.52	00	00
	Total (15)	Mean	21.95	89.78	25.36	97.26
		S.D.	2.68	2.05	3.63	1.65

In our study total 55 candidates were found overweight and obese, Out of them 36 were male and 19 were female in urban school. In rural school 15 candidates were overweight and obese among them 9 were male and 6 were female.

According to this table, overall mean ± SD of overweight and obese candidates in urban school were 23.48 ± 2.58 and 27.24 ± 4.41 Kg/m^2respectively. In rural school overall mean ± SD of overweight and obese candidates were 21.95 ± 2.68 and 25.36 ± 3.63 Kg/m^2respectively

Discussion

In our study, out of 70 overweight and obese candidates, 26 (72.9%) consume fast food infrequently while 44 (27.1%) consume frequently. Children who ate junk food more frequently were more obese and overweight as compared to those who ate food in low frequency. This was found to be statistically significant (p = 0.001)

In our study, out of total 70 overweight and obese candidates, 28 (40 %) candidates watched TV less than 1 hour while remaining 42 (60 %) watched TV more than 2 hours. Statistical significance was found between BMI and hours of watching TV (p = 0.001). According to outdoor activity 52 (74.3%) candidates had outdoor activity less than 1 hour while remaining 18 (25.7%) had outdoor activity for more than 1 hour. An association of statistical significance (p=0.001) was found between BMI and their corresponding duration of time spent on outdoor physical activity. Our finding was similar to observations made by Verma et al.[7] (2015).

Manju Lata and Ajay[8] (2017) concluded that low levels of physical activity, consuming high calorie/junk food, increased television watching are significant risk factors in causation of childhood obesity in children and suggest an urgent need to educate urban community on aspects of healthy food habits and desired lifestyle to prevent it.

In our study prevalence of overweight and obese was more in urban school in comparison to rural school because of less outdoor activity, intake of frequent fast food and prolonged TV watching.

Conclusion

Duration of physical activity, consumption of fast food and watching TV had a significant association with BMI.

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