



A STUDY TO DETERMINE CORRELATION IN OBESITY AND HYPERTENSION IN SCHOOL GOING CHILDREN OF AJMER

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ABSTRACT

Background: Hypertension is the most common, most potent universal contributor to cardiovascular mortality. Elevated blood pressure, labile or fixed, systolic or diastolic, at any age, in either sex is a contributor to all forms of cardiovascular diseases.

Material and method: A Cross-sectional study was carried out over a period from January 2016 to October 2016 conducted among total 1498 school going children of Ajmer belonging to the age group of 8 to 18 years of both genders.

Result: 1498 children of 8 to 18 years were studied. Out of which 56.43% were male and 43.68% were female. Prevalence of hypertension was higher in obese children in comparison to overweight and not overweight children 12.84%, 8.78%, 2.70% respectively.

Conclusion: This study revealed that prevalence of hypertension was significantly higher in overweight and obese compared to children with Normal BMI indicating obesity as a risk factor for hypertension.

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INTRODUCTION

Hypertension is the most common, most potent universal contributor to cardiovascular mortality. Elevated blood pressure, labile or fixed, systolic or diastolic, at any age, in either sex is a contributor to all forms of cardiovascular diseases¹. Studies on hypertension in childhood have the important advantage that they may help in the control and possibly prevention of high blood pressure before its harmful sequelae can occur.

The prevalence of hypertension in children is reported to range from a high of 16.2% to a low of less than 1%²⁻⁵. This diversity in prevalence of hypertension is due to the varying age groups taken for the study and different criteria adopted for defining hypertension, basic differences between racial sub-groups related to geographic, dietary and cultural factors.

MATERIAL AND METHODS

Source of data

Apparently healthy school children in the age group of 8 to 18 years in Ajmer City.

Period of study

During the term between January 2016 to October 2016.

Method of Collection of Data

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In this study data regarding the list of Schools in Ajmer city was collected from Rajasthan Govt. official website (rajssa.nic.in). Two government & two private schools were selected from total schools by using simple random sampling. Within the selected school children were selected by systematic sampling technique, proportionate to the total number of children in that school.

Sample size

Sample size calculated on the basis of the prevalence of obesity in urban Indian school children as 10%. Calculation of sample size done by using the formula of $4pq/L^2$ Where p (10%) is the prevalence, q=1-p (90%), L is the allowable error. The sample size was calculated as 1112, considering a relative error of 18%. So, sample size was kept above it, Total 1600 apparently healthy students were enrolled, but out of them 102 students were left on follow up. So, total 1498 students were studied, with keeping almost equal distribution of gender and all ages groups.

Inclusion Criteria

Apparently healthy school going children between the age group 8 to 18 years of both sexes, who had given consent.

Exclusion Criteria

- Those children unwilling for study
- Those who were absent during the time of conduction of study due to any reason.
- Children with any acute or chronic illness.

- Children on long term medication.
- Those who do not give required information.

Data recording

Data were collected in two predesigned performa meeting the objective of the study. On first performa all personal details and examinations were recorded. Detailed personal and family information including family history of overweight and hypertension was recorded on second performa with the help of their parents and recollected on next fixed date visit.

Ethical Issues

The plan of thesis was approved by Institutional Ethical Committee of JLN Medical College, Ajmer. Purpose of study was fully explained to the children and their verbal consent was obtained prior to the examination.

RESULTS

Table No. 1 Age & Gender wise distribution of children

Age	Gender		Total
	Boy	Girl	
8 Year	51 6.00%	45 6.90%	96 6.40%
9 year	68 8.10%	40 6.10%	108 7.20%
10 year	54 6.40%	38 5.80%	92 6.10%
11 year	57 6.80%	57 8.70%	114 7.60%
12 year	96 11.40%	76 11.60%	172 11.50%
13 year	122 14.50%	102 15.60%	224 15.00%
14 year	118 14.00%	98 15.00%	216 14.40%
15 year	83 9.80%	63 9.60%	146 9.70%
16 year	74 8.80%	54 8.30%	128 8.50%
17 year	49 5.80%	44 6.70%	93 6.20%
18 Year	72 8.50%	37 5.70%	109 7.30%
Total	844	654	1498

Table shows that total 1498 children of 8 to 18 years were studied. Out of which 56.43% were male and 43.68% were female. Majority (40.90%) of children belonged to 12 to 14 years of age. Rest of children were almost equally distributed in below 12 years and above 14 years of age.

Table no. 2 Distribution of Blood Pressure of children with their BMI

Blood Pressure	BMI			Total
	Not overweight	Over weight	Obesity	
Normal blood pressure	1068 90.20%	151 73.65%	57 52.29%	1276 85.18%
Pre-hypertension	84 7.09%	43 20.97%	31 28.44%	158 10.54%
Hypertension	32 2.70%	18 8.78%	14 12.84%	64 4.27%
Total	1184 100.00%	205 100.00%	109 100.00%	1498 100.00%
	$\chi^2=10.87$			$p \leq 0.05$

Table shows that prevalence of hypertension was higher in obese children in comparison to overweight and not overweight children 12.84%, 8.78%, 2.70% respectively. The difference was statically significant.

DISCUSSION

Prevalence of hypertension was higher in obese and overweight as comparison to not overweight children 12.84%, 8.78%, 2.70% respectively. The difference was statistically significant. Aullen JP (1978)⁶ found a strong link between obesity and high blood pressure. Similarly, Manu Raj *et al* (2003)⁷ found systolic or diastolic hypertension in 17.34% overweight children versus 10.1% of the remaining students and Also Mohan B *et al* (2004)⁸ found that prevalence of hypertension was higher in overweight and obese children in comparison to children with normal BMI. A combination of factors including over activity of the sympathetic nervous system, insulin resistance, and abnormalities in vascular structure and function may contribute to obesity-related hypertension in children⁹⁻¹².

CONCLUSION

This study revealed that prevalence of hypertension was significantly higher in overweight and obese compared to children with Normal BMI indicating obesity as a risk factor for hypertension.

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