

Original Research Article

# To establish association of hypertension in children between 5 to 11 years of age with obesity.

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## Abstract:

**Background & Method:** The aim of the study is to establish association of hypertension in children between 5 to 11 years of age with obesity. A semi-structured pre-tested questionnaire was given to each child and their parents. Questionnaire including information about demographic details (name, age, sex, address and family history of hypertension in parents. Findings were reconfirmed with parents.

**Result:** 10.1 % children were overweight while 5.1% children were obese. Most of the participants didn't have a family h/o hypertension. 7.2% children had hypertension, 9.1% children had elevated bp, rest of them were normotensive

**Conclusion:** Around 5% children were obese and 10% children were overweight, hypertension was strongly associated with obesity, a family history of hypertension, increased chest circumference and less time of outdoor activity.

**Keywords:** hypertension, children & obesity.

**Study Designed:** Observational Study.

## 1. Introduction

Developing countries like India is undergoing a rapid epidemiological transition with increased urbanization and socio-economic development which has resulted in a dramatic change in lifestyle, consisting of physical inactivity, diet rich in fat, sugar and salt coupled with a high level of mental stress[1]. This has led to increased incidence of lifestyle diseases like hypertension, type 2 Diabetes Mellitus, dyslipidemia, obesity and ischemic heart diseases. Obesity can be seen as the first wave of a defined cluster of non-communicable diseases called "New World Syndrome" creating an enormous socioeconomic and public health burden in poorer countries[2].

Obesity, overweight and hypertension in school children and adolescents are emerging as newer health problems in developing countries like India. The magnitude of overweight ranges from 9 to 27.5% and obesity ranges from 1 to 12.9% among Indian children[3].

Overweight and obesity are increasingly prevalent nutritional disorder among children and adolescents in the world. Presently in India also there is sharp rise in number of children and adolescents with obesity. Overweight children have a greater chance of becoming overweight adolescents and obese adults compared to children of normal weight. The severity of obesity and age of onset affect the likelihood of persistence of obesity into adulthood and thus entrainment of obesity induced morbidities like prehypertension and hypertension[4]. Numerous health problems are associated with adolescent overweight including hypertension, respiratory disease, several orthopaedic disorders, diabetes mellitus and elevated serum lipid concentrations. Obese children are also reported to have increased heart rate variability and blood pressure variability[5].

Increased arterial blood pressure is a major risk factor for cardiovascular, cerebro-vascular and renal disease. Indeed, high blood pressure or hypertension may be considered as a major cause of morbidity and mortality in many populations[6]. The insidious and steady history of hypertension in adults indicates that essential hypertension in adults is a result of process, that starts early in childhood and adolescent life, but probably goes unnoticed. So that preventive measures, early detection and modifying the risk factors can protect these children from developing complications and thereby reducing the morbidity and mortality.

## **2. Material & Method**

Asymptomatic children, mostly from urban and some rural areas around Kolkata , between the age group of 5 to 11 years attending OPD for regular check up or for mild illnesses not known to affect BP.

A semi-structured pre-tested questionnaire was given to each child and their parents. Questionnaire including information about demographic details (name, age, sex, address and family history of hypertension in parents. Findings were reconfirmed with parents. The questionnaire was a validated one, prepared after consultation with experts in the health and community level. The exact age of children was verified from birth certificates. Children were explained about study in their local language.

### **INCLUSION CRITERIA:**

1. Asymptomatic School children between the age group of 5 to 11 years attending paediatrics OPD.
2. Family history of hypertension.

### **EXCLUSION CRITERIA:**

1. Symptomatic hypertensive school children.
2. School children of age group below 5years and above 11 years.
3. Sick children or having illnesses that can affect BP
4. Those unwilling to took part in the study.
5. Children who had any chronic illness.
6. Whose parents were not willing for consent.

### 3. Results

**TABLE 1: AGE DISTRIBUTION OF PARTICIPANTS**

AGE IN YEARS	FREQUENCY	PERCENTAGE
5	110	11
6	160	16
7	210	21
8	160	16
9	180	18
10	78	7.8
11	102	10.2

**TABLE 2: PREVALENCE OF ELEVATED BP AND HYPERTENSION**

BP STATUS	FREQUENCY	PERCENTAGE
HYPERTENSIVE	72	7.2
ELEVATED BP	91	9.1
NORMOTENSIVE	837	83.7
TOTAL	1000	100

7.2% children had hypertension, 9.1% children had elevated bp, rest of them were normotensive

**TABLE 3: PREVALENCE OF FAMILY HISTORY OF HYPERTENSION**

FAMILY	H/O FREQUENCY	PERCENTAGE
HYPERTENSION		
PRESENT	144	14.4
ABSENT	856	85.6
TOTAL	100	100

MOST OF THE PARTICIPANTS DIDN'T HAVE A FAMILY H/O HYPERTENSION

**TABLE 4: PREVALENCE OF UNDERWEIGHT (<5<sup>TH</sup> PERCENTILE), HEALTHY WEIGHT (5<sup>TH</sup>-84<sup>TH</sup>) PERCENTILE, OVERWEIGHT (84<sup>TH</sup> TO 95<sup>TH</sup> PERCENTILE) NAD**

**OBES (>95<sup>TH</sup> PERCENTILE)**

WEIGHT	FREQUENCY	PERCENTAGE	VALID	CUMULATIVE
CATEGORY			PERCENTAGE	PERCENTAGE

UNDER WEIGHT	46	4.6	4.6	4.6
HEALTHY	802	80.2	80.2	84.8
OVER WEIGHT	101	10.1	10.1	94.9
OBESE	51	5.1	5.1	100
TOTAL	1000	100	100	

10.1 % CHILDREN WERE OVER WEIGHT WHILE 5.1% CHILDREN WERE OBESE

#### 4. Discussion

This cross sectional study was done in a total of 1000 children of 5 -11 years of age who attended the OPD of M.R. Bangur Hospital, West Bengal who met all inclusive criteria were selected in the study by random sampling method. The aim of the study was to determine the prevalence of asymptomatic hypertension and its association with obesity, waist circumference, time spent in outdoor activities and family history of hypertension in children between 5 to 11 years attending the OPD of a govt. hospital in West Bengal[7].

In this present study, a total of 1000 children of 5 -11 years of age who met all inclusive criteria were included, among which 560[56%] were boys and 440[44%] were girls .Almost equal number of boys and girls of each age were present [chi square statistic 10.843,p value 0.055]. The mean weight(in kgs) in boys were mean(SD)= 26.73(5.5) and in girls were mean(SD) =27.10(6.6) with T statistic, p value(- .954,.340) .The mean height(in cm) in boys were mean(SD)=125.02(8.9) and in girls were mean(SD)=124.45(10.6) with T statistic, p value(.982, .326).The mean BMI (in kg/m<sup>2</sup>) in boys were mean(SD)=16.92(1.84) and in girls were mean (SD)=17.24(2.2) with T statistic, p value(-2.509, .012).The mean SBP (mm of Hg) in boys were mean(SD)= 103.9(7.1) and in girls were mean(SD) =103.9(8.9) with T statistic, p value(- .052,.958).The mean DBP (mm of Hg) in boys were mean(SD)= 66.8(7.9) and in girls were mean(SD) =67.2(8.4) with T statistic, p value(-.794,.958) [8].

In this present study ,hypertension was considered when average SBP and/or DBP that is greater than or equal to the 95thpercentile for sex, age, and height on three or more occasions and Elevated BP in children was considered when average SBP or DBP levels that are greater than or equal to the 90thpercentile, but less than the 95thpercentile for their age, gender and height OR 120mm Hg to <95<sup>th</sup> percentile(whichever is lower) Blood pressure percentiles were determined by Blood pressure percentiles charts adjusted for age and gender[9].

#### 5. Conclusion

Around 5% children were obese and 10% children were overweight, hypertension was strongly associated with obesity, a family history of hypertension, increased chest circumference and less time of outdoor activity.

## 6. References

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