



A Prevalence of Hypertension in Children – School Based Study

Authors

Dr. M. S. Raju¹, Dr. S.Narmadha²

¹Associate Professor of Paediatrics, Rangaraya Medical Collage, Kakinada

²Postgraduate Student of Paediatrics, Rangaraya Medical Collage, Kakinada

Corresponding Author

Dr. M. S. Raju

4-392/16, Opp. Mandal Primary School, Old Gaigolu Padu-533005, Kakainada Rural, East Godavari Dist,
Cell: 9441240626

Email: raju.moora@gmail.com

Abstract

Objectives: To study the prevalence and aetiology of Hypertension in school children aged 10-15 Years.

Methods: In this study 975 students from 3 Govt. Schools and 975 Students from 4 Pvt. Schools of age group of 10 – 15 Years were selected based on random table method with help of their role numbers.

Anthropometric data, Blood Pressure measurement and family history of Hypertension, Diabetes, Ischemic Heart Disease and Obesity were collected for all 1950 Children. For children with High Blood Pressure readings or positive family history, repeated Blood Pressure measurements were taken on three different occasions with one-week interval.

Subsequently, in children with increased Blood Pressure on three separate occasions, detailed history was taken, children were thoroughly examined and necessary investigations were done.

Results: The present study includes 1950 children of which the prevalence of Hypertension is 2.4% (47/1950) and Pre Hypertension is 8.15% (159/1950) with p value - 0.0001 which is statistically significant.

Prevalence of Hypertension is 3.69% (36/975) in Private School Children while it is 1.2% (11/975) in children from Govt. School. Prevalence of Pre Hypertension is 14.25% (139/975) in Private School while it is 2.05% (20/1950) in Govt. Schools.

Pre Hypertension is found to be more prevalent in 13 – 15 Years (10.09%) age group then 10 – 12 Years age group (5.79%) with p value of 0.0006 which is statistically significant.

Prevalence of Pre Hypertension and Hypertension is more in children with family history of Hypertension, Diabetes Mellitus, Obesity and Ischemic Heart Disease. In overweight children Pre Hypertension is more and in obese children, Hypertension is more.

Secondary Hypertension is seen in 4 Cases out of which 2 cases are diagnosed with Hyperthyroidism and 2 cases has history of acute Glomerulonephritis.

Conclusion: Hypertension and Pre Hypertension are more common in older children (13-15 Years). Prevalence of Pre Hypertension and Hypertension is more in boys then is girls. Corporate Schools then in Govt. School, High – Socioeconomic group then low Socio-Economic group, with family history of Hypertension, Diabetes Mellitus, Obesity and Ischemic Heart Disease, Obesity Children and Overweight Children without any physical activity.

Keywords: Pre Hypertension, Hypertension, Secondary Hypertension, Glomerulonephritis.

Introduction

Even though Hypertension is a disease of adults, it is not uncommon in children. Primary Hypertension during childhood often tracks to adulthood children with Blood Pressure more than 10th Percentile have 2.4 fold greater risk of having Hypertension in adults. There is also association between childhood Hypertension and early atherosclerosis in Young adulthood. Hypertension children usually asymptomatic.

Prevalence of essential Hypertension in Children is 1-3% according to fourth task force. In Infants and young children, Systemic Hypertension is uncommon with a prevalence of less than 1% but when present, it is often indicative of an underlying disease process (Secondary Hypertension).

Left ventricular Hypertrophy is the most common representation of target organ damage in Hypertension Children. Primary Hypertension should be second for comorbidities that may increase cardiovascular risk, Hyperlipidemia and Glucose Intolerance.

Material and Methods

The Sample collections for the present study is under taken from Oct.'2010 to June.'2012 from Govt. Schools and Private Schools of 975 Students of each, total of 1950 Children of age groups 10-15 Years were selected based on the random table methods with help of their roll numbers

Those who had any chronic systemic diseases and those who had been advised bed rest for more than 15 days during the last 6 months due to any sickness are excluded from the study.

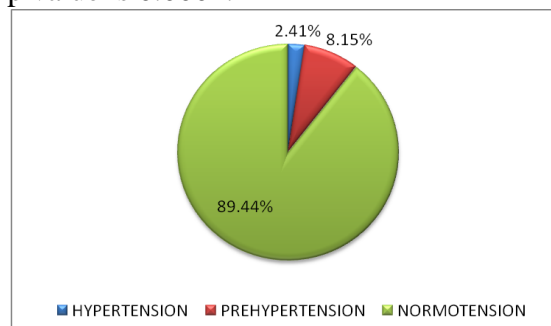
The present study is a randomized cross sectional study. Anthropometric data, Blood Pressure measurement and family history of Hypertension, Diabetes Mellitus, Ischemic Heart Disease and Obesity were collected for 1950 children.

For those children for high blood pressure reading are positive family history repeated blood pressure measurements were taken on three different occasions with one-week interval. Subsequently, in children with increase blood pressure on three separate occasions and detailed history was taken. Children were thoroughly examined and necessary investigations were done.

Anthropometric data weight (Height, Body Mass Index) was collected for all the children table investigations were done in those children with hypertension. These include blood glucose, s creatinine, blood urea, urine analysis, thyroid profile and lipid profile. Ultrasonography, echocardiography and renal Doppler were done as required.

Results

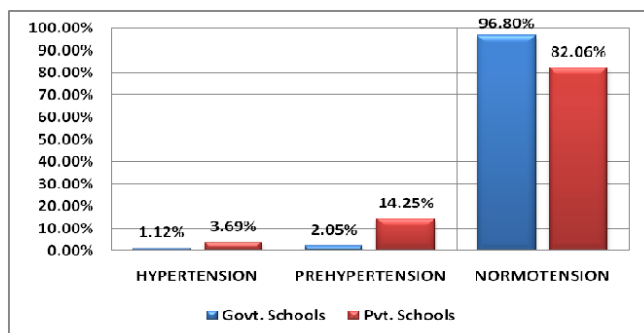
The prevalence of pre hypertension is 8.15% (159/1950) and Hypertension 2.41% (47/1950) the p value is 0.0001.



Prevalance of hypertension is 3.9% (36/975) in private school while it is 1.12% (11/975) in Govt. School children. Prevalence of Pre Hypertension

is 14.25% (139/975) in Private School while it is 2.05% (20/975) in Govt. School.

Prevalence of Hypertension and Pre Hypertension is higher in high socio-economic 3.43% and 12.70% compare to low socio-economic group 1.07% and 2.14%.



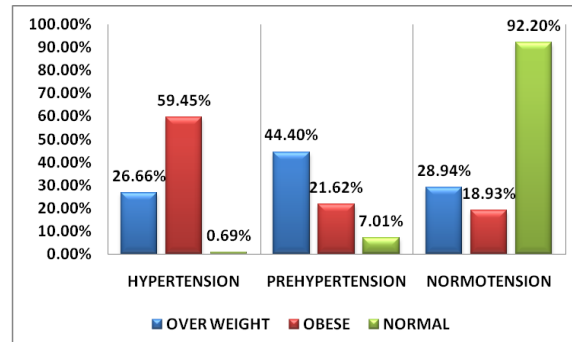
Hypertension and Pre Hypertension is more prevalent in children of age 13-15 Years 2.7% (29/1070), 10.09% when compared to children of age 10-12 Years 2.04% (18/880), 5.79% - P Value – 0.0006.

Prevalence of Hypertension and Pre-Hypertension in boys 2.45% (26) and 9.52% (101) compared to girls 2.35% (21) and 6.51% (58).

Prevalence of Pre-Hypertension and Hypertension is more in children with family history of hypertension (30.37%, 14.3%), Diabetes Mellitus (28.43% and 13.23%), Obesity (32.4%, 15.17%) and Ischemic Heart Disease (25%, 7.81%) with p value <0.0001.

In overweight children Pre-Hypertension common 44.40% and in obese children Hypertension 21.62% is more common.

Prevalence of Hypertension in children with no outdoor sport activity 40 (3.09%) and Pre-Hypertension is 123 (9.52%).



Secondary Hypertension is seen in 4 cases out of which 2 cases are Hyperthyroidism and 2 cases are with Glomerulonephritis.

Discussion

Hypertension is a multi factorial problem which is associated with various combined illness. Hypertension is previously thought to be a disease of predominantly older population but in the decades there is an increase in young onset of hyper tension in adolescents and young adults.

Globally prevalence of childhood hypertension varies from 10 % in USA, to 4.6% in African countries.

Hyper Tension and Pre-Hypertension increasing in corporate schools (3.69% and 14.25%) children compared to Govt. School (1.12% and 2.05%) children. High Socio-Economic Children have high prevalence of hypertension and pre-hypertension 3.43% and 12.70% compared to low socio-economic (1.07% and 2.14%) children.

Family history of Hypertension, Diabetes Mellitus, Obesity and Ischemic Heart Disease children are more prone to hypertension and pre-hypertension. Sedentary life style plays a significant role in obesity which is associated with development of hypertension.

Conclusion

Hypertension and Pre-Hypertension are more in older children than in younger children. Prevalence of Pre-Hypertension is almost doubled in older children (13-15 Years) than in younger children (10-12 Years).

Prevalence of Hypertension and Pre-Hypertension more in boys, Corporate school children, High Socio-Economic group, Family History of Hypertension, Diabetes Mellitus, Obesity, Ischemic Heart Disease, Overweight children, Obesity Children and children not having sport activity.

Recommendations

- School Health Check-ups may be implemented by all schools (Govt. and Corporate) which should include monitoring of weight, Blood Pressure Measuring annually by health care providers.
- Children with family history of risk factors should be screened at regular intervals since early childhood for early intervention.
- As obesity leads to hypertension, steps should be under taken to reduce the burden of obesity and overweight by life style modification. i.e. healthy diet, adequate physical activity and yoga exercises for stress relief.
- Awareness should be created to the parents, teachers and also to the health care personal that hypertension is not only the disease of adults but children also at high risk and early intervention can help.

- The importance of proper physical education and diet should be taught to the children.
- As it is an essentially preventable programme the present day practitioner should focus on prevention of hypertension at same time reducing they impact on children who are already pre-hypertensive.

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