



STUDY TO FIND OUT INCIDENCE OF ASYMPTOMATIC HYPERTENSION IN CHILDREN BETWEEN 6 TO 12 YEARS OF AGE IN PARWATI CLINIC AND RESEARCH CENTRE, DEOGHAR, JHARKHAND

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Abstract

Background: Asymptomatic nature of hypertension in children makes it all the more important to study its prevalence and risk factors in a specific age group to guide early detection strategies. Therefore, it is extremely necessary to know the magnitude of the problem in our society. Hence, this study was designed to find out the incidence of asymptomatic hypertension/high BP in school going children.

Methodology: This study was carried out in Parwati Clinic and Research Centre from 04 March 2022 to 31 November 2022 among school going children of 6 to 12 years of age using cross-sectional technique. Total number of cases studied was 1052. Blood pressure was measured in a controlled environment and after 10 minutes of rest in seated position with cubital fossa supported at heart level. Blood pressure was recorded on three separate occasions.

Results: The researcher found incidence of systolic and diastolic hypertension among boys were 4.60% and 3.64% respectively (Table 2) and in girls 3.77% and 3.96% (Table 1) respectively. The overall incidences of systolic and diastolic hypertension were 4.18% and 3.80% respectively

Conclusion: Blood pressure should be measured routinely in all paediatric examination including in office practice and monogram should be available to every doctor to classify a case of hypertension or normotension according to age, sex and height.

Keywords: Blood Pressure, Hypertension, Pediatrics health care, Normotension

1. Introduction

Hypertension, also called high blood pressure, is a principal public health issue the world over, usually linked with adults. Yet, its signs in children have

been identified as a contemporary health problem. The arterial pressure is conventionally written as systolic pressure over diastolic pressure, e.g. 120/60 mmHg. The relevance of childhood BP measurement in paediatrics health care and development of adult

essential hypertension has undergone substantial conceptual changes during the past few years[1]. The incorporation of BP measurement into routine paediatrics examination as well as the publication of national norms for BP in children not only enable detection of significant asymptomatic hypertension secondary to a previously undetected disorder but also confirmed that mild elevation in BP during childhood were more common than previously recognized. It is now understood that hypertension detected in some children may be a sign of an underlying disease such as renal parenchymal disease, whereas in other cases elevated BP may represent early onset of essential hypertension.

The prevalence of hypertension in children is significantly less (1-3%). The prevalence of persistent secondary hypertension in children is approximately 0.1% and renal disease predominate in this age group. Education anticipatory guidance, early detection, accurate diagnosis and effective therapy may help to improve the long term outcome of children and adolescents affected by this “silent killer”[2].

Children between the ages of 6 to 12 years represent a crucial age group for the prevention and early detection of hypertension. During this period, children were becoming more independent and are often exposed to lifestyle factors such as poor dietary habits and lack of physical activity, which can predispose them to elevated blood pressure. Regular blood pressure monitoring in this age group is essential, as early detection can lead to timely intervention that can prevent the progression of hypertension into adulthood. However, screening practices were often not routinely implemented in pediatric care, leading to missed opportunities for early diagnosis.

According to the American Academy of Pediatrics, a blood pressure measurement should be taken at every routine pediatric visit, starting from the age of 3 years, yet studies show that this is not always the case in practice. Asymptomatic hypertension is often overlooked because children may not exhibit

symptoms such as headaches, dizziness, or visual disturbances, which were typically associated with more severe or advanced stages of hypertension in adults. This asymptomatic nature of hypertension in children makes it all the more important to study its prevalence and risk factors in a specific age group to guide early detection strategies. Therefore, it is extremely necessary to know the magnitude of the magnitude of the problem in our society. Hence, this study was designed to find out the incidence find out the incidence of asymptomatic hypertension/high VP in school going children. The results from this study might be helpful in developing clinical guidelines for the early identification of hypertension in children and encourage proactive healthcare measures to check future cardiovascular and metabolic ailments.

2. Methodology

This study was carried out in Parwati Clinic and Research Centre from 04 March to 31 October 2022 among school going children of 6 to 12 years of age using cross-sectional technique. Total number of cases studied was 1052. Blood pressure was measured in a controlled environment and after 10 minutes of rest in seated position with cubital fossa supported at heart level. Blood pressure was recorded on three separate occasions. The average of each systolic and diastolic measurement was recorded. Blood pressure was measured in all the four limbs. Phase-1 (K1) of Korotkoff sound was considered as systolic pressure. Phase IV (K4) of Korotkoff sound was considered as diastolic pressure. Blood pressure was measured by auctulatory method and mercury manometer wa used to measure BP. Cuff sized were selected on the basis of actual physicl built of the child (Table 1).

A cuff having a bladder width that was approximately 40% of arm circumference midway between the olecranon and the acromion was chosen. This will usually be a cuff bladder that will cover 80% to 100% circumference of the arm.

Cut off value of labelling hypertension is more than 95th percentiles for age, sex and height.

Stage 1 hypertension: SBP or DBP from 95th percentile to 99th percentile plus 5 mm to Hg.

Stage 2 hypertension: SBP or DBP greater than 99th percentile plus 5 mm Hg.

So, a child was considered having high BP if the BP is more than 95th percentile for the age, sex and height. If the BP was found raised, the child was subjected to investigation to find out the aetiology in the subsequent follow-up period.

Prior consent was taken before any invasive procedure. Descriptive statistics were calculated for all variables of interest. Comparing of blood pressure among girls and boys was done by unpaired “t” test.

3. Results and Discussion

This study followed random cross-sectional analysis of BP of school going children from 6 to 10 years of age. Total 1052 children were taken of which 530 were girls and 522 were boys (Tables 1 and 2).

Blood pressure was measured by mercury manometer on three separate occasions on 10 minutes interval in relaxed state. The mean systolic and diastolic blood pressures were taken for statistical calculation. Age distribution and high blood pressure both stage I & stage II are shown in Table 1 and Table 2. The overall incidence of hypertension for systolic and diastolic are 4.18% and 3.80% respectively (Table 3).

Table 1

Age	No. of Observation	Sex	Systolic BP		Diastolic BP	
			95th-99th Percentile plus 5 mm of Hg	99th Percentile Plus 5 mm of Hg	95th-99th Percentile Plus 5 mm of Hg	99th Percentile Plus 5 mm of Hg
6-7 Yr	125	F	04	00	06	00
7-8 Yr	100	F	04	01	03	01
8-9 Yr	108	F	03	01	05	00
9-10 Yr	68	F	03	00	02	00
10-11 Yr	66	F	03	00	03	00
11-12 Yr	63	F	02	00	02	00
Total	530	F	19	02	21	01
Incidence			3.77%		3.96%	

Table 1

Age	No. of Observation	Sex	Systolic BP		Diastolic BP	
			95th-99th Percentile plus 5 mm of Hg	99th Percentile Plus 5 mm of Hg	95th-99th Percentile Plus 5 mm of Hg	99th Percentile Plus 5 mm of Hg
6-7 Yr	110	M	08	00	05	00
7-8 Yr	110	M	03	01	04	00
8-9 Yr	108	M	04	00	03	00
9-10 Yr	64	M	03	00	01	00
10-11 Yr	65	M	03	00	03	00
11-12 Yr	65	M	03	00	03	03
Total	522	M	24	01	19	00
Incidence			4.60%		3.94%	

Table 1 shows numbers of girls having systolic or diastolic blood pressure range 95th-99th Percentile plus 5 mm of Hg and 99th Percentile plus 5 mm of Hg. The researcher found 19 stage-I hypertension (3.77%) and 2 stage-II hypertension (0.37%) for systolic blood pressure and 21 stage-I hypertension (3.96%) and 1 stage-II hypertension (0.19%) for diastolic blood pressure out of 530 girl children. Table 1 also shows hypertension is 62/118 slightly higher in 6 and 7 years of age that may be due to anxiety and fear of the children who had never undergone blood pressure measurement before.

Table 2 shows number of boys having systolic or diastolic blood pressure range 95th-99th Percentile plus 5 mm of Hg and 99th Percentile plus 5 mm of Hg. In my study I found 24 stage-I hypertension (4.60%) and 1 stage-II hypertension (0.19%) for systolic blood pressure and 19 stage-I hypertension (3.64%) and no stage-II hypertension for Diastolic blood pressure out of 522 boy children. Table 2 also shows hypertension is slightly higher in 6 and 7 years of age that may be due to anxiety and fear of the children who had never undergone blood pressure measurement before.

The overall incidence of primary and secondary hypertension are 3.70% and 0.47% (Figure 1).

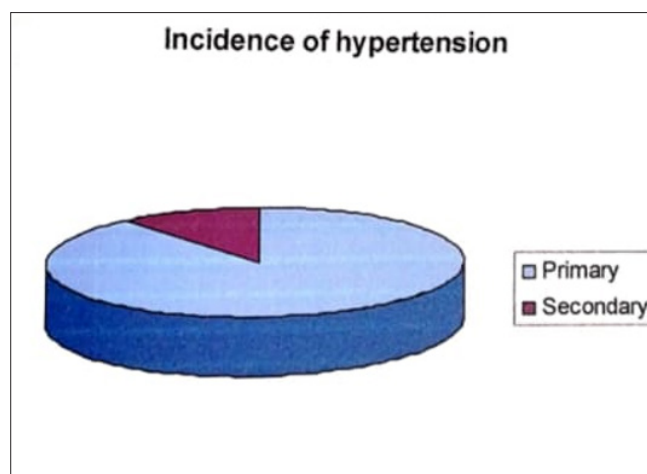


Figure 1

The researcher found incidence of systolic and diastolic hypertension among boys were 4.60% and 3.64% respectively (Table 2) and in girls 3.77% and 3.96% (Table 1) respectively. The overall incidences

of systolic and diastolic hypertension were 4.18% and 3.80% respectively (Table 3). The prevalence of hypertension in childhood decreased between the first and third visit from 13% to 1% in Verma study[3], 9% to 2% in Fixler study[4], 9% to 3.6% in Hashen et al.[5] and 9.6% in Ghaunem[6]. This high incidence of hypertension in my study may come to lower range if they are subjected to second or third examination that is very difficult for me in a short period of time.

Table 3

Incidence of Hypertension	
No of Primary hypertension:	39 (3.70%)
No of Secondary hypertension:	05 (0.47%)

Dilermamdo Fazito de Rezende et al study[7] showed no significant sex difference in prevalence of hypertension. In this study, the researcher found only little sex difference in distribution of systolic and diastolic blood pressure.

4. Conclusion

This study concludes that blood pressure should be measured routinely in all paediatric examination including in office practice and monogram should be available to every doctor to classify a case of hypertension or normotension according to age, sex and height. Routine blood pressure measurement should also be incorporated in school health programme. Hypertensive child should be thoroughly investigated and be treated accordingly in order to prevent further hypertension and related morbidity and mortality.

5. Conflict of Interest: None

6. References

1. Update on the 1987 Task Force Report on High Blood Pressure in Children and Adolescents: A working group from National High Blood Pressure Education Program. National High Blood Pressure Education Program. On Hypertension control in children and adolescents. Pediatrics 1996; 98: 649-658.
2. Gulati S. Hypertension in children. Indian

- Journal of Pediatrics. 2002; 69: 1077-1081.
3. Verma M, Chatwal J, George SM. Obesity and hypertension in children. Indian Pediatric. 1994 Sep;31(9):1065-9.
 4. Fixler DE, Laird WP, Fitzgerald V, Stead S, Adams R. Hypertension screening in schools: results of the Dallas Study, Pediatrics 1979; 63: 32-6.
 5. Hashen Y, Jaddou MD, et al. Blood pressure profile in school children and adolescents in Jordan. The Queen Alia heart institute March 2000.
 6. Ghaumen H et al. Study of cardiovascular disease risk factors among urban school children in sausse, Tunisia. Eastern
 7. Dilermando Fazito de Rezende; Ricardo Augusto Baeta Scarpelli et al. Prevalence of systemic hypertension in students aged 7 -14 years in the municipality of Barbacena, in the state of Minas Gerais. Arg. Bras. Cardiol vol 81, no-4 Sao Paulo act 2003.

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