

Awareness of Pre-Hypertension and Hypertension in Adolescent Population among Paediatricians

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Abstract

Blood pressure elevation is a vital sign among children and adolescents than previously thought. The prevalence of hypertension in adolescents far exceeds the numbers who are diagnosed; studies done so far, have found that 75% or more goes undiagnosed. Documentation of elevated Blood Pressure readings at three or more well child visits has been found to greatly improve the chances of a correct diagnosis. Guidelines for the screening for and diagnosis, evaluation, and management of hypertension in children have been available for 40 years. Unfortunately, clinicians repeatedly fail to acknowledge the problem and therefore majority of hypertensive children remain undiagnosed. Several reasons for this are documented: including lack of knowledge of the problem and the complexity of blood pressure standard readings among children.

Keywords: Prehypertension; Hypertension; Paediatricians; Adolescence.

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Introduction

Hypertension is a complex and multifactorial disease with many other contributing factors. Amongst all, diet and nutrition are important influences. The confounding effects of overweight and obesity, metabolic and genetic factors, racial and ethnic predispositions, socioeconomic status, cultural influences, growth rate and pubertal stage have highest influence and make diagnosis quite challenging.¹

In children, Prehypertension is persistent elevation of Blood Pressure that equals or exceeds

the 90th percentile for a normotensive child of the equivalent age, sex, and height or is below the 95th percentile but exceeds 120/80 mm Hg (either Systolic BP exceeds 120 mm Hg, or Diastolic BP exceeds 80 mm Hg, or both). Hypertension is persistent BP that equals or exceeds the 95th percentile for a normotensive child of the equivalent age, sex, and height. Documentation of elevated BP readings at 3 or more well-child visits has been found to greatly improve the probabilities of a correct diagnosis, by nearly double for children with hypertension, and more than triple for those with prehypertension. With repeated testing, it is found that approximately 9% of adolescents had a change in BP classification, with 6.2% decreasing from prehypertension to normotensive, and 2.9% increasing from prehypertension to hypertension.² Table 1.

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Table 1:

Age groups	Normal	Prehypertension	Stage I Hypertension	Stage II Hypertension
3-11 yrs	<90 th percentile	90 th -<95 th percentile	95 th -99 th percentile + 5 mmHg	>99 th percentile + 5 mmHg
12-17 yrs	<90 th percentile	90 th -<95 th percentile or > 120/80 mmHg	95 th -99 th percentile + 5 mmHg	>99 th percentile + 5 mmHg

Paediatrics hypertension may be a risk factor for adult cardiovascular disease making early detection important. The prevalence of Paediatrics essential hypertension is rising due to the increased prevalence of obesity.³

Guidelines for the screening and diagnosis, evaluation, and management of hypertension in children have been available for 40 years. Unfortunately, clinicians consistently fail to recognize the problem and the majority of hypertensive children remain undiagnosed. Several reasons for this have been documented including lack of knowledge of the problem and the complexity of blood pressure standards among children.⁴ It is recommended that annual BP measurement in all children ≥ 3 years.⁵

Priorities to enhance clinical practice include more education among clinicians about diagnosis and management, clinical decision support to aid in diagnosis, and routine use of ambulatory BP monitoring to aid in diagnosis and to monitor response to treatment.^{6,7}

This study provides key insights into the barriers to diagnosis and management of Paediatrics hypertension in specifically knowledge gaps through medical education and training on essential hypertension in children. To beat these barriers, pediatric providers desire additional education that will allow them to address the health needs of their patient population, with a specific focus on lifestyle management, as well as a tool to aid in diagnosis and management at the point of care.⁸

Aim and Objectives

1. To study the importance of taking blood pressure in adolescents by the Paediatricians.
2. To assess the knowledge of Hypertension and Prehypertension in adolescence among Paediatricians.
3. To create awareness of regular monitoring of blood pressure by Paediatricians in Adolescence.

Material and Methods

This cross sectional survey was done through Google Doc form questioners by online mode. The

questioners was prepared which included questions like Qualification of Paediatricians, experience, awareness of Prehypertension and Hypertension, Values of Prehypertension and Hypertension in children, its risk factors, when should monitor blood pressure in children etc.

In this study of Awareness of Pre-hypertension and Hypertension in adolescent population among Paediatricians total 136 participants were involved. Out of this near about 60% were with Master degree.

Nearly half of the Paediatricians who participated in this survey were practicing for more than 15 yrs.

Maximum Paediatricians are using manual type of blood pressure apparatus for B.P. measurements.

Only half of the participants were aware of regular checkup of blood pressure in adolescent child.

Blood pressure measurement

The mercury BP instrument used in our study was new leak proof and their accuracy was checked with standard mercury manometer.

The children were evaluated by a team consisting of two specially trained pediatricians, two research assistants, and a social worker who visited the school at least a week before the examination date. The pre examination visit was intended to familiarize with the teachers and students and to discuss and schedule the plan of examination.

All children were clinically examined in a comfortable position in a noise-free room during morning hours. Weight was measured using a calibrated scale and height using a stadiometer. BP measurement was carried out using mercury sphygmomanometer, following standard guidelines in sitting position. At least 5 min of rest in sitting position was provided before taking BP. Children were asked to sit on appropriate sized chairs, allowing for comfortable sitting with back supported, legs uncrossed and touching the ground, and arm supported during measurements. Observers and children were instructed to keep silence. The right arm was selected for BP measurement for consistency. Appropriate BP cuff was selected covering at least 40% of arm circumference with midline of cuff positioned over the arm following palpation of the brachial artery in the antecubital fossa. BP was measured in each

child three times at a minimum interval of at least 5 min in between successive measurements on the same day. The onset of the first Korotkoff sound was taken as systolic BP (SBP) and end of Korotkoff sounds as diastolic BP.¹⁴ In circumstances where Korotkoff sounds were heard till 0 mm Hg, the BP measurement was repeated with less pressure on the head of the stethoscope. In the event of persistence of very low fifth Korotkoff sounds, fourth Korotkoff sounds (muffling of the sounds) were recorded as the diastolic BP.

Observations and Results

In this study of Awareness of Pre-hypertension and Hypertension in adolescent population among Paediatricians total 136 participants were involved. Out of this near about 60% were with Master degree. (Table 2, Fig. 1).

Table 2: of Awareness of Pre-hypertension and Hypertension in adolescent population among Paediatricians.

Sr No	Qualification	Number	Percentage
01	DCH	44	32.4
02	M.D. PAEDIATRICS	84	61.8
03	DNB	04	2.9
04	Any other	04	2.9
Total 136			

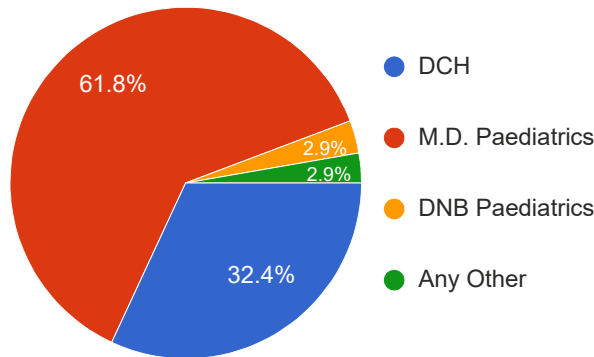


Fig. 1:

Nearly half of the Paediatricians who participated in this survey were practicing for more than 15 yrs. (Table 3, Fig. 2).

Table 3: Paediatricians who participated in this survey were practicing for more than 15 yrs.

Yrs of Practice	Number	Percentage
0-5	36	26.5
6-10	20	14.7
11-15	08	5.9
More than 15	72	52.9
Total 136		

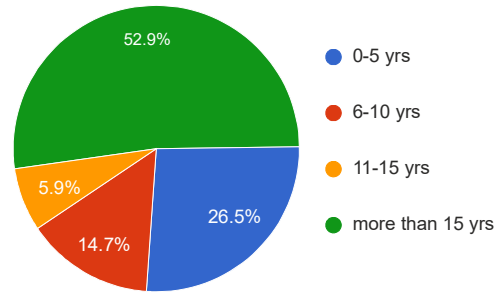


Fig. 2:

Maximum Paediatricians are using manual type of blood pressure apparatus for B.P. measurements. (Table 4, Fig. 3).

Table 4: Maximum Paediatricians are using manual type of blood pressure apparatus for B.P. measurements.

Sr No	Type of Machine	Number	Percentage
01	Aneroid blood pressure monitor (manual)	88	64.7
02	Digital blood pressure monitor (Electronic)	48	35.3
03	Finger blood pressure monitor	00	00
04	Any other	00	00

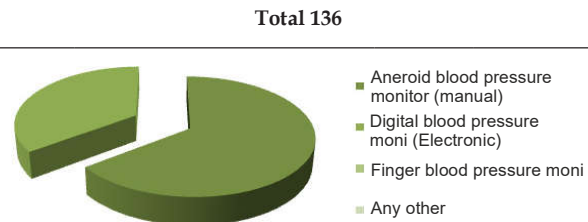


Fig. 3:

Only half of the participants were aware of regular checkup of blood pressure in adolescent child. (Table 5, Fig. 4).

Table 5: The participants aware of regular checkup of blood pressure in adolescent child.

Sr No	Type of Response	Number	Percentage
01	Yes	52	38.2
02	No	20	14.7
03	SOS	64	47.1

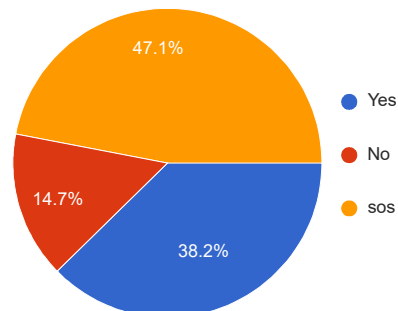


Fig. 4:

100% of the Paediatricians were aware of hypertension in children.

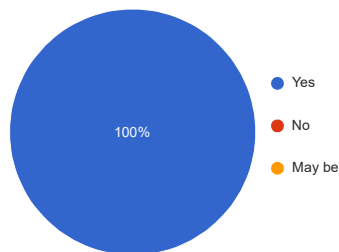


Fig. 5:

Distribution of Awareness of definition of childhood Systolichypertension are given below. (Table 6, Fig. 5).

Table 6: Awareness of definition of childhood Systolic hypertension.

Systolic B.P. (mmhg)	Number	Percentage
120-129	64	47.1
130-139	52	38.2
140-149	20	14.7
More than 150	00	00
Total 136		

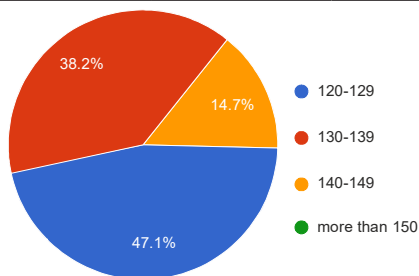


Fig. 6:

Awareness of definition of childhood Diastolic hypertension is as follows: (Table 7, Fig. 6)

Table 7: Awareness of definition of childhood Diastolic hypertension.

Diastolic B.P. (mmhg)	Number	Percentage
80-89	64	47.1
90-99	60	44.1
More than 100	12	8.8
Total 136		

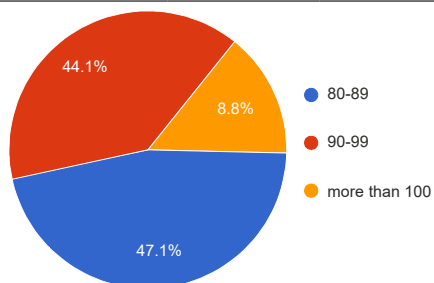


Fig. 7:

The percentage awareness of prehypertension in children among Paediatricians is categorized as per Table. (Table 8, Fig. 7).

Table 8: Awareness of prehypertension in children among Paediatricians.

Diastolic B.P. (mmhg)	Number	Percentage
Yes	128	91.4
No	08	8.6
May be	00	00
Total 136		

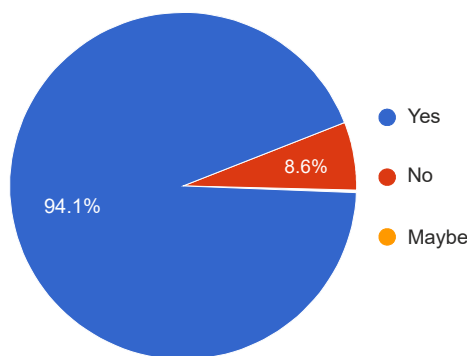


Fig. 8:

The awareness of Level of blood pressure (120-139/80-89 mm-Hg-Pre-Hypertension) in adolescents among Paediatricians are given in following table. (Table 9, Fig. 8).

Table 9: Awareness of Level of blood pressure (120-139/80-89 mm-Hg- Pre-Hypertension) in adolescents among Paediatricians.

	Number	Percentage
Correct	108	78.8
Wrong	20	15.2
Don't know	08	6.1
Total 136		

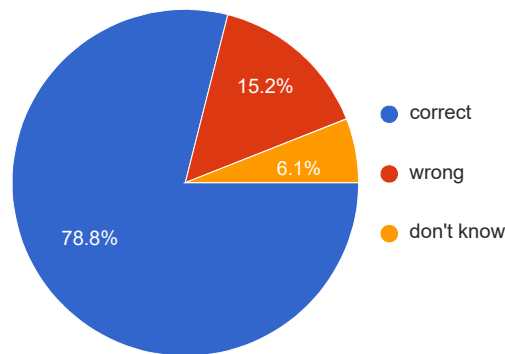


Fig. 9:

The following table shows awareness of Prehypertension as a emerging s a new entity in child population are given in following Table. (Table 10 and Fig. 9)

Table 10: awareness of Prehypertension as a emerging s a new entity in child population.

	Number	Percentage
Yes	112	82.4
No	04	2.9
May be	20	14.7
Total 136		

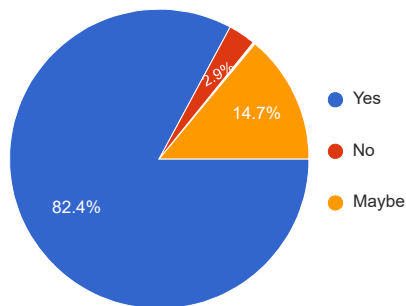


Fig. 10:

The significance of Routine blood pressure measurement in children among Paediatricians are: (Table 11 Fig. 10).

Table 11: Routine blood pressure measurement in children among Paediatricians.

	Number	Percentage
Every 6 monthly	72	52.9
Yearly	44	32.4
SOS	20	14.7
No need		00
Total 136		

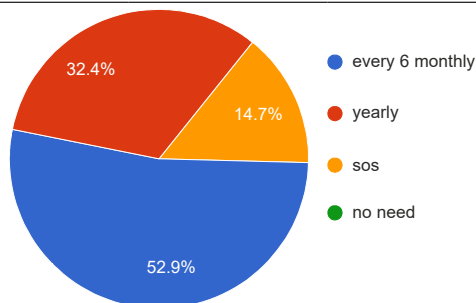


Fig. 11:

Conclusions

Though guidelines for screening, diagnosis, evaluation, and management are available, there are barriers to accurate diagnosis of pediatric hypertension, including lack of knowledge and complexity of blood pressure standards. The awareness and significance of regular monitoring of blood pressure in Adolescent population among Paediatrician is still lacking. Prehypertension and Hypertension as a emerging diseases in Adolescents requires more conduction of CMEs, Workshop or guest Lectures.

Our results show a high prevalence of prehypertension and hypertension in school children with age and height being significant determinants. This highlights the need for routine BP measurements in children by pediatricians when they treat them for intercurrent illnesses or vaccinate them. It should also be mandatory as a part of school health checkup programs to detect childhood hypertension for further counseling and therapy.

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