

## Prevalence and Factors Associated with Hypertension in Children Admitted at Mahosot Hospital, Vientiane Capital, Lao PDR

Oulaivanh Vongxay<sup>1</sup>, Suwannee Wisanuyotin<sup>2</sup>, Sourideth Sengchanh<sup>1</sup>, Mick Soukavong<sup>1</sup>

1. Faculty of Medicine, University of Health Sciences, Vientiane, Laos
2. Faculty of Medicine, Khon Kaen University, Thailand.

Received 18 July 2022; received in revised form 20 November 2023; accepted for publication 25 November 2023

### Abstract

**Background:** Hypertension (HTN) is becoming an increasingly recognized health problem and a major problem in low-and middle-income countries. The obesity epidemic has seen increasing diagnoses of hypertension in children, who are more likely to go on to have hypertension as adults. For all patients, the goal of identifying and treating hypertension is to prevent end-organ damage and reduce mortality.

**Methods:** A descriptive cross-sectional study was conducted among 309 inpatients aged 1-15 years who were screened for hypertension during their admission from July 1st, 2021 to Jan 31st, 2022. The study used a multistage sampling method and face-to-face interviews with children and caregivers. The questionnaire was developed and pre-tested before data collection commenced. Univariate and multivariate logistic regressions were carried out to identify risk factors associated with hypertension.

**Results:** Among 309 children screened for hypertension during admission, the prevalence of hypertension was 12.6 %. Hypertension was most frequently identified among 6 to 10-year-olds (39.0%). High blood pressure was more frequent in males (56.1 %) than females (43.9 %). The factors associated with high blood pressure included overweight/obesity ( $P<.001$ ) and underlying renal disease ( $P< 0.05$ ). The most common cause was secondary hypertension 84.6% (Sepsis-induced AKI 36.4%, Post-Streptococcal Glomerulonephritis 21.2%, SLE with nephritis 12.1%). The most common symptoms were headache (65.8% in HTN stage II, 29.0% in HTN stage I), nausea (64.7% in HTN stage II, 32.4% in HTN stage I) and vomiting (58.6% in HTN stage II and 38.0% in HTN stage I). Seizures and coma only occurred in HTN stage II. For the treatment of hypertension, calcium channel blockers were used in the majority (56.4%). The mortality rate in our study was 10.3%.

**Conclusion:** There was a high prevalence of hypertension among admitted children in our study, with the highest number aged 6 to 10 years and associations with overweight/obesity and underlying renal disease. Most cases were secondary HTN and mortality among this specific population was high and warrants exploration of underlying reasons. In addition, understanding how to use the identification of HTN during admission to provide preventative interventions would seem critical.

**Copyright:** © 2023 Oulaivanh *et al.* This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Keywords:** Prevalence, hypertension screening, hypertension, Mahosot Hospital.

\* **Corresponding author:** Oulaivanh Vongxay, Tel: +8620 7782 0328, Email: oulaivanh1@hotmail.com

## Introduction

Hypertension is an important public health problem because it affects various organs in the body and significant increase in interest in childhood hypertension (HTN) since the 2004 fourth report: 3.5% of children have HTN another 10-11% have elevated blood pressure. The increased prevalence is due to obesity. High blood pressure in childhood the risk for adult HTN and vascular disease, even youth with HTN have evidence of accelerated vascular aging [1]. Hypertension is becoming an increasingly recognized health problem in children. The obesity epidemic has led to a greater frequency of hypertension diagnoses in children. In adults, hypertension is a leading cause of preventable death, heart attack, stroke, and kidney disease. For all patients, the goal of identifying and treating hypertension is to prevent end-organ damage and reduce mortality [2]. Hypertension is a major risk factor for cardiovascular, renal, and neurologic diseases. It seems that hypertension and overweight in children are a growing epidemic. Since hypertension is a significant risk factor for different disorders, prevention, and control of elevated blood pressure in children might be an important strategy for limiting global disease with the assessment of blood pressure levels in childhood we can predict hypertension in adults [3]. Children with elevated blood pressure are more likely to become hypertensive in adults [4].

Hypertension is also the second leading cause of end-stage renal disease among adults requiring dialysis in the United States. Nearly 25% of adults in this country are hypertensive, and worldwide, the World Health Organization lists hypertension as the number one cause of death. In the US, hypertension is the number one reason for adults to see their physicians [5]. Recommends for screening hypertension from the age of 3 years old. Screening is supposed to be a health check performed in a certain population to allow early diagnosis of diseases or identification of risk factors in apparently healthy people. In our opinion, measuring blood pressure during the growth-monitoring visit is an examination that each pediatrician should perform in all his/her patients [6].

The prevalence of childhood high BP, including both HTN and elevated BP. High BP is consistently greater in boys (15%–19%) than in girls (7%–12%) [7]. In Laos, the prevalence of hypertension in high school screening was 38.3%. It was found that elevated BP at 27.1%, Stage I hypertension at 6.3%, and Stage II hypertension at 4.9%. There is still no research on hypertension screening in children at the hospital. Hypertension and complications are important causes of morbidity and mortality among the population of Vientiane, Laos but the risk factors related to the disease remain unknown. Understanding the risk factors associated with hypertension would help plan prevention strategies. Hypertension is one of the major

factors for mortality in Saudi Arabia. Furthermore, high BP is considered to be a significant risk for heart disease responsible for 30% of all deaths all over the world [8].

This study was conducted to determine the prevalence and factors associated with hypertension in children 1-15 years old admitted to the pediatric ward at Mahosot Hospital.

## Methods

### Study design and setting

This study is descriptive and cross-sectional in design, the study was conducted in the pediatric ward (Pediatric Intensive Care Unit, Pediatric General Ward, and Infectious Ward) at Mahosot Hospital, Vientiane, Lao PDR. We screened hypertension in all children aged 1-15 years old admission during July 1<sup>st</sup>, 2021 to Jan 31<sup>th</sup>, 2022. The study used a multistage sampling method and face-to-face interviews with children and caregivers. The questionnaire was developed and pre-tested before data collection commenced.

### Participants

The sample for this study was nonprobability purposive sampling. The sample size was calculated based on a single population formula, corresponding to a 95% confidence level at which  $Z = 1.96$ , with an estimated prevalence of depressive symptoms from previous research of 30.7% ( $p = 0.3$ ) [9]. The absolute precision was at  $d = 0.05$ , which allowed for design effect and 5% for the non-response rate, thus producing a sample size of 320 children. We excluded children with hypotensive shock and children cannot be measured blood pressure.

### Measurement of variables

The independent variables consisted of the demographic characteristics (age, gender, body weight, height, BMI) and Underlying disease characteristics: renal, lung, cardiovascular, endocrine, neurologic abnormalities, history of prematurity, and history of UTI, and medication.

The dependent was the classification stage of hypertension, clinical manifestations, investigation, and treatment outcome during admission.

### Study analysis

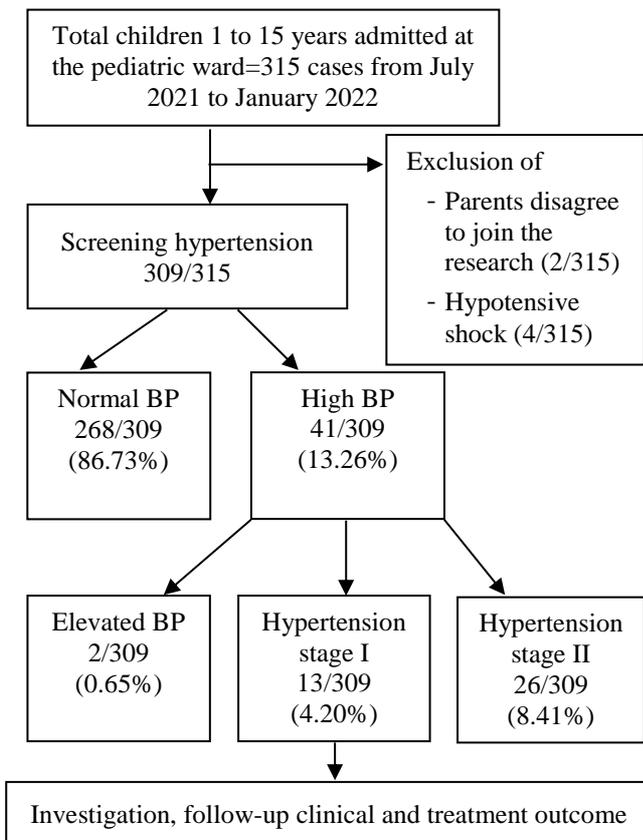
This study used Epi-Data to enter the data and Stata 14 for analysis. Descriptive statistics were applied to analyze the frequency and percentage of the independent and outcome variables and standard deviation for continuous data after the normality assumptions were checked. Variables with a significance level of  $P < 0.25$  in the bivariable logistic regression analysis were selected for inclusion in the multiple logistic regression model. A multiple logistic regression analysis was done and the results were reported using adjusted odds ratios (OR) with 95% Confidence levels. Finally, a statistically significant level was declared at  $p < 0.05$  in the final regression model.

**Ethical considerations**

The formal ethics approval for this research was obtained from the Research Ethics Committee of the University of Health Sciences in Lao PDR based on decision No 125/REC, and their written consent was obtained before the interview. Participants had the right to withdraw from the study at any time. To respect the confidentiality of participants, the names of respondents were not included in any results, and information collected from respondents was kept strictly confidential.

**Results**

**Flow chart of patients' recruitment**



A total of 309 children completed the interview, follow-up clinical manifestations, and treatment. The prevalence of hypertension was 12.62% and Elevated BP was 0.65%. We saw hypertension in males 56.10% more than females 43.90%. The most common age of high blood pressure was 6-10 years 39.02% and 11-15 years 34.14%. High blood pressure cases admission in pediatric general ward 60.97%, pediatric intensive care unit 21.95%, infectious disease ward 17.07%. Because of the COVID-19 pandemic most hypertension children live in Vientiane's capital city 82.92% (Table 1).

Table 1: Socio-demographic profiles of the participants and prevalent hypertension

Variable	Enrolled children	
	High BP (n=41) N (%)	Normal BP (n=268) N (%)
<b>Sex</b>		
Male	23 (56.10)	156 (58.20)
Female	18 (43.90)	112 (41.80)
<b>Age (Year)</b>		
1-5	11(26.83)	107 (39.92)
6-10	16 (39.02)	119 (44.40)
11-15	14 (34.14)	42 (15.67)
Mean ± SD (Year)	6.83 ± 3.66	
<b>Ward of admission</b>		
Pediatric general ward	25 (60.97)	199 (74.25)
Infectious disease	7 (17.07)	57 (21.26)
Pediatric intensive care unit	9 (21.95)	12 (4.48)
<b>Residence</b>		
Vientiane capital	34 (82.92)	219 (81.71)
Other provinces	7 (17.07)	49 (18.28)
<b>Nutrition status in children under 5 years Weight for height (W/H Z-scores)</b>	<b>n=2</b>	<b>n=116</b>
Normal growth	1 (2.44)	33 (12.31)
Moderate malnutrition	1 (2.44)	79 (29.48)
Severe malnutrition	0	4 (1.49)
<b>Nutrition status in children more than 5 years Body Mass Index (BMI)/m<sup>2</sup></b>		
Underweight	30 (73.17)	150 (55.97)
Normal weight	2 (4.88)	1 (0.37)
Overweight and obesity	7 (17.07)	1 (0.37)

**Underlying disease and factors associated with high blood pressure**

In the multivariate logistic regression analysis, it was revealed with high blood pressure that the underlying renal disease (P<0.017) and overweight/Obesity (P< 0.001). For the underlying renal disease had CKD at 2.43%, congenital hydronephrosis (Left VUR grade IV) at 2.4%, and Recurrent UTI at 2.4% (Table 2).

Table 2: Underlying disease and factor associated with hypertension

Variables	Crude Odds Ratio	95% CI	P-value	Adjusted Odds Ratio	95% CI	P-value
<b>Age group</b>						
1-5Y	1			1		
6-10 Y	1.31	0.58 - 2.94	0.516	1.11	0.47 - 2.58	0.827
11-15Y	3.24	1.36 - 7.71	0.008	2.6	0.89 - 6.69	0.081
<b>BMI</b>						
Normal weight	1			1		
Underweight	1.51	0.44 - 5.20	0.65	2.29	0.59 - 8.59	0.234
Overweight/obese	79.33	7.16 - 878.83	<0.001	89.83	6.11 - 905.46	0.001
<b>History of hypertension in the family</b>						
No	1			1		
Yes	2.22	1.14 - 4.32	0.018	1.35	0.63 - 2.89	0.036
<b>Underlying renal diseases</b>						
No	1			1		
Yes	6.97	1.36 - 35.81	0.02	8.22	1.46 - 46.43	0.017

- COR: Crude Odds Ratio (obtained from bivariate analysis).
- *p*-value < 0.05 was counted as significant.

**Causes of hypertension**

The most common cause of hypertension in our study was secondary causes 84.61% and primary causes 15.38%. We classified the secondary causes as sepsis induce AKI at 36.36%, APSGN at 21.21%, SLE with LN at 12.12%, Congenital KUB abnormalities at 12.12%, HUS at 6.06%, IgA vasculitis at 6.06%, Obstructive sleep apnoea with underlying Down syndrome 3.03%, rabies with hypertension stage II 3.03% (Table 3).

Table 3: Causes of hypertension

Variables	n=39 (%)
<b>Primary hypertension</b>	6 (15.38)
Comorbid obesity	6 (100)
<b>Secondary hypertension</b>	33 (84.61)
Sepsis induces AKI	12 (36.36)
APSGN	7 (21.21)
SLE and LN	4 (12.12)
Congenital KUB abnormalities	4 (12.12)
HUS	2 (6.06)
IgA vasculitis	2 (6.06)
Obstructive sleep apnea with underlying Down syndrome	1 (3.03)
Rabies with hypertension state II	1 (3.03)

**Clinical manifestation**

In our study, the most common symptoms were headache, nausea, and vomiting 100%, Dizziness was only seen in hypertension stage I 30.43% and stage II 69.57%. Seizures and Coma are seen in hypertension stage II, edema at 73.3%, and oliguria at 72.22% in the HTN stage (Table 4).

Table 4: Clinical manifestation

Clinical presentation:	High blood pressure (n=41)		
	Elevate BP n (%)	Stage I n (%)	Stage II n (%)
Headache	2 (5.26)	11 (28.95)	25 (65.79)
Nausea	1 (2.94)	11 (32.35)	22 (64.71)
Vomiting	1 (3.45)	11 (37.93)	17 (58.62)
Dizziness	-	7 (30.43)	16 (69.57)
Blurred vision	-	1 (16.67)	5 (83.33)
Seizure	-	-	5 (100.00)
Coma	-	-	4 (100.00)
Edema	-	4 (26.67)	11 (73.33)
Oliguria	-	5 (27.78)	13 (72.22)
Fatigue	2 (6.67)	9 (30.00)	19 (63.33)

**Abnormal investigation**

High blood pressure cases had proteinuria was 48.78%, Hematuria 46.34%, and Pyuria 9.76%. Fasting blood sugar 75 ± 36.304 (Mean ±SD) mg/dl, BUN 34.88 ±28.477 mg/dl, Creatinine 1.35±1.281 mg/dl, Cholesterol 178.49 ± 71.679 mg/dl, Na 134.78 ± 5.705 mEq/L, K 4.128 ± 0.771 mEq/L. Chest X-ray had LVH 17.08%, and echocardiogram show LVH 9.76% (Table 5).

Table 5: Abnormal investigation in cases of hypertension

Variables	High blood pressure (n=41)	
	Frequency	Percentage
<b>Urine analysis:</b>		
Proteinuria	20	48.78
Hematuria	19	46.34
Pyuria	4	9.76

Variables	High blood pressure (n=41)	
	Frequency	Percentage
<b>Chest X-ray</b>		
No Lab	5	12.2
Normal	21	51.22
LVH	7	17.08
Pneumonia	8	19.52
<b>Ultrasound KUB</b>		
No Lab	7	17.07
Normal	27	65.85
Abnormal	7	17.08
<b>Echocardiogram</b>		
No Lab	13	31.71
Normal	24	58.54
LVH	4	9.76

Table 5: Chemistry investigation cases of hypertension

Chemistry investigation	Min	Max	Mean	SD
Creatinine	0.4	7.80	1.3517	1.28143
BUN	12	150	34.8878	28.47727
Fasting blood glucose	75	270	114.8195	36.30462
Cholesterol	85.07	347	178.4920	71.67997
Na <sup>+</sup>	120	147	134.768	5.7055
K <sup>+</sup>	2.9	6.8	4.128	0.7713

**Treatment of hypertension**

The treatment of hypertension in children was Amlodipine 38.46%, Nifedipine 23.08%, Amlodipine + Furosemide IV 12.82%, Enalapril 7.69%, Amlodipine + Furosemide (Oral) 5.13%, and Nicardipine 5.13% (Table 7).

Table 7: Treatment of hypertension

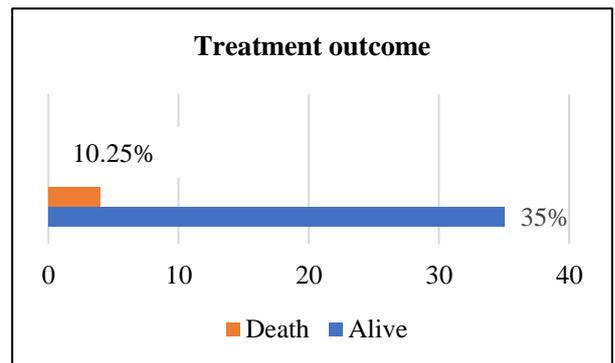
Variable	Hypertension (n=39)	
	Frequency	Percentage
<b>Antihypertensive drugs:</b>		
Amlodipine	15	38.46
Nifedipine	9	23.08
Amlodipine + Furosemide IV	5	12.82
Enalapril	3	7.69
Amlodipine + Furosemide (Oral)	2	5.13
Nicardipine	2	5.13
Nifedipine + Furosemide (Oral)	1	2.56
Caraten	1	2.56
Hydralazine	1	2.56

**Mortality and causes of death**

In case hypertension had alive 89.74%, 26 classified as stage 2 and the mean of blood pressure post management was able decreased 25% compare with first

hour blood pressure when patient was admitted by mean 120/80 mmHg and stage I 13 cases the average Blood pressure was 100/70 mmHg before discharge and death 10.25%. The cause of death was CKD due to the right single kidney with Congenital hydronephrosis with Septicemia (E-coli ESBL) with Septic shock and DIC 2.56%, Aseptic Meningitis due to rickettsia with Septic Shock and AKI 2.56% and Severe pneumonia due to melioidosis with Septic Shock and DIC with AKI and Liver failure 2.56%, Rabies with hypertension state II 2.56%.

Figure 1: Treatment outcome of hypertension



**Discussion**

This was the first study about prevalence and factors associated in children who were admitted to IPD in the Mahosot Hospital. It was a Descriptive cross-sectional study and the total population was 309 cases for screening hypertension during admission. The prevalence of hypertension was (12.62%) and the most Common age group of high blood pressure was 6-10 years (39.02%). Hypertension was found in male (56.10%) more than females (43.90%). It was similar to the study the pediatric clinic from King Abdulaziz University Hospital in Jeddah. The prevalence of hypertension was 15.17%. A high prevalence was observed for the age group of 6–10 years and male [9]. It is higher than the published study in students of 2 schools in Thailand, pre-hypertension was 5.7% and 2.7% for boys and girls and hypertension (HT) was 4.7% for boys and 3.2% for girls [10].

The factor Associate with hypertension in our study were overweight/obesity (P=0.001) and underlying renal diseases (P=0.017). It was the same with the study in Jeddha, the common risk factors for hypertension were the age range of 6–10 years, (OR = 2.44), overweight and obese children (OR = 2.44), children with FH of hypertension (OR = 1.39), and children with low birth weight (OR= 1.05) [9]. In China, the prevalence of hypertension in children was 12.55%. Obesity was associated with increased risk of hypertension [11].

The cause of hypertension in our study was Secondary hypertension in 84.61% and primary hypertension in 15.38% and it was the same with the study in Tehran, Primary hypertension 43% (n = 119;

boys = 56%; median age = 12 years; range = 3–17 years) and secondary hypertension 57% (n = 156; boys = 66%; median age = 9 years; range = 0.08–19 years). Primary hypertension had a significantly older age at diagnosis (P = 0.002), a stronger family history of hypertension (94% vs. 68%; P < 0.001) [12].

The most common symptoms of high blood pressure in our study were headache, nausea, and vomiting 100%, Dizziness was only seen in hypertension stage I at 30.43% and II at 69.57%. Seizures and Coma 100% saw only in hypertension stage II, edema at 73.33%, and oliguria at 72.22% in hypertension stage II. The difference from retrospective study was conducted from 2009 to 2019 on 166 Childhood hypertension and follow-up their clinical manifestations and relevant laboratory data were collected for statistical analysis. The result of this study shows primary hypertension cases (57/91) had no obvious clinical symptoms. In the 75 secondary hypertension headache and dizziness were the most common symptoms [13].

In our study, abnormal investigation in high blood pressure saw proteinuria was 48.78%, Hematuria was 46.34%, and Pyuria 9.76%, Fasting blood sugar  $75 \pm 36.304$  mg/dl, BUN  $34.88 \pm 28.47$  mg/dl, Creatinine  $1.35 \pm 1.281$  mg/dl, Cholesterol  $178.49 \pm 71.679$  mg/dl, Na  $134.78 \pm 5.705$  mEq/L, K  $4.128 \pm 0.771$  mEq/L. Chest X-ray had LVH 7 (17.08%), and echocardiogram show LVH 4 (9.76%). It was the same with retrospective chart review of patients found to have high BP at their pediatrician's office and then referred to the pediatric nephrology clinic at Children's Hospital of Michigan from January 2002 to December 2005. The study was approved by the Human Investigation Committee at Wayne State University and the Research Review Committee at the Detroit Medical Center saw abnormal creatinine (P=0.01), abnormal electrolytes (P=0.04), USG (P<0.001), and echocardiography (P=0.03) were significantly higher in children with secondary HTN, while abnormal results on other laboratory tests did not show significant differences between the primary and secondary HTN groups. Patients with primary HTN with abnormal PRA had detailed investigations [8].

Treatment hypertension in our study mostly anti-HTN usage CCB (Calcium channel blockers): Amlodipine 38.46%, Nifedipine 23.08%, Amlodipine plus IV Furosemide 12.82%, Enalapril 7.69%, Amlodipine plus oral Furosemide 5.13%, and Nicardipine 5.13%. It was the same as the AAP guideline recommended Pharmacologic treatment in hypertensive children and adolescents who have failed lifestyle modifications, particularly those who have LVH on echocardiography, symptomatic HTN, or Stage 2 HTN without a modifiable factor, clinicians should initiate pharmacologic treatment with an ACE inhibitor, ARB, long-acting calcium channel blocker, or thiazide diuretic [14].

## Limitations of the study

The patient population in the present study was smaller than the sample size calculation because of the COVID-19 pandemic. The prevalence in this study may not refer to the prevalence of the normal population because we studied only in the sick children

## Conclusion and Recommendations

The prevalence of hypertension was significant in admitted children and higher in young children, the overweight, the obese, and children with underlying renal disease. Mostly was secondary HTN and needed to do investigation and treatment. HTN is one of the important problems to look for, especially in children who have obesity and underlying renal disease. The mortality rate in our study is high but cannot refer to all population.

## Consent for publication

Not applicable.

## Availability of data and materials

The datasets and/or questionnaire of the study are available from the corresponding author on reasonable request.

## Acknowledgements

First of all, I would like to sincerely thank the Ministry of Health, the University of Health Sciences the Faculty of Medicine in Laos and Khonkaen University, Thailand.

## References

1. Eliza B, Flynn JT. Implications of the 2017 AAP Clinical Practice Guidelines for Management of Hypertension in Children and Adolescents: a Review. *Curr Hypertens Rep.* 2019 May;21(5):35.
2. Hardy ST, Urbina EM. Blood Pressure in Childhood and Adolescence. *Am J Hypertens.* 2021 Apr 2;34(3):242–9.
3. Wühl E. Hypertension in childhood obesity. *Acta Paediatr.* 2019 Jan;108(1):37–43.
4. Fan Z, Liao Z, Zong X, Zhang S. Differences in prevalence of prehypertension and hypertension in children and adolescents in the eastern, central and western regions of China from 1991-2011 and the associated risk factors. Jia Z, editor. *PLOS ONE.* 2019 Jan 10;14(1):e0210591.
5. McNiece KL, Poffenbarger TS, Turner JL, Franco KD, Sorof JM, Portman RJ. Prevalence of Hypertension and Pre-Hypertension among Adolescents. *J Pediatr.* 2007 Jun;150(6):640-644.e1.
6. Genovesi S, Antolini L, Giussani M. Hypertension screening in children: is it necessary? 2015;
7. Kumar P. Prevalence of Hypertension and its Risk Factors Among School Going Adolescents of Patna, India. *J Clin Diagn Res [Internet].* 2017

- [cited 2023 Sep 17]; Available from: [http://jcdr.net/article\\_fulltext.asp?issn=0973-709x&year=2017](http://jcdr.net/article_fulltext.asp?issn=0973-709x&year=2017)
8. Baracco R, Kapur G, Mattoo T, Jain A, Valentini R, Ahmed M, et al. Prediction of Primary vs Secondary Hypertension in Children. *J Clin Hypertens*. 2012 May;14(5):316–21.
  9. Ghamri R, Hegazy A, Azizkhan A, Alsalmi S, Alharbi N, Hemedi R, et al. High blood pressure in children attending pediatric clinic at King Abdulaziz University Hospital, Jeddah, Saudi Arabia. *J Fam Community Med*. 2019;26(3):193.
  10. Sukhonthachit P, Aekplakorn W, Hudthagosol C, Sirikulchayanonta C. The association between obesity and blood pressure in Thai public school children. *BMC Public Health*. 2014 Dec;14(1):729.
  11. Liang X, Xiao L, Luo Y, Xu J. Prevalence and risk factors of childhood hypertension from birth through childhood: a retrospective cohort study. *J Hum Hypertens*. 2020 Feb;34(2):151–64.
  12. Mohkam M, Karimi A, Eslami N, Khatami A, Fallah F, Maham S, et al. Blood Pressure Screening in School-aged Children in Tehran. 2011;5(4).
  13. Wang Z, Shao Y, Jin J, Rong X, Qiu H, Wu R, et al. Clinical follow-up study of 166 cases of children with hypertension. *Transl Pediatr*. 2021 Jul;10(7):1834–42.
  14. Flynn JT. 2017 AAP Guidelines for Childhood Hypertension.
-

# ອັດຕາການເກີດ ແລະ ປັດໃຈທີ່ກ່ຽວຂ້ອງກັບຄວາມເດັ່ນເລືອດສູງ ໃນເດັກທີ່ເຂົ້າອນປົນປົງຢູ່ໂຮງໝໍມະໂຫສິດ, ນະຄອນຫຼວງວຽງຈັນ, ສປປ ລາວ

ອຸໂລວັນ ວົງໄຊ<sup>1</sup>, ສຸວັນນິ ວິດສະນຸໂຍທິນ<sup>2</sup>, ສຸລິເດດ ແສງຈັນ<sup>1</sup>, ມິກ ສຸຂະວົງ<sup>1</sup>

1. ຄະນະແພດສາດ, ມະຫາວິທະຍາໄລ ວິທະຍາສາດ ສຸຂະພາບ, ນະຄອນຫຼວງວຽງຈັນ, ສປປ ລາວ
2. ຄະນະແພດສາດ, ມະຫາວິທະຍາໄລ ຂອນແກ່ນ, ປະເທດໄທ

ໄດ້ຮັບຕົ້ນສະບັບ ທີ 18 ກໍລະກົດ 2022, ໄດ້ຮັບບົດທົດແກ້ຄືນ ທີ 20 ພະຈິກ 2023, ເຫັນດີໃຫ້ຈັດພິມ 25 ພະຈິກ 2023

## ບົດຄັດຫຍໍ້

**ປະຫວັດຄວາມເປັນມາ:** ພະຍາດຄວາມດັນເລືອດສູງກຳລັງກາຍເປັນບັນຫາສຸຂະພາບທີ່ໄດ້ມີການຮັບຮູ້ຫຼາຍຂຶ້ນ ແລະ ເປັນບັນຫາສຳຄັນໃນປະເທດກຳລັງພັດທະນາ. ການແຕ່ລະບາດພະຍາດຕຸ້ຍໃນເດັກໄດ້ສົ່ງຜົນໃຫ້ມີການບົ່ງມະຕິຄວາມດັນເລືອດສູງໃນເດັກຫຼາຍຂຶ້ນ ແລະ ເດັກທີ່ມີຄວາມດັນເລືອດສູງຕອນຍັງນ້ອຍຈະສົ່ງຜົນໃຫ້ມີຄວາມສ່ຽງຕໍ່ການເປັນຄວາມດັນເລືອດສູງໃນຕອນໃຫ່ຍຫຼາຍຂຶ້ນ. ສຳຫຼັບຄົນເຈັບເປັນທີ່ເປັນພະຍາດຄວາມດັນເລືອດສູງທຸກຄົນເປົ້າໝາຍຫຼັກໃນການບົ່ງມະຕິ ແລະ ການປິ່ນປົວຄວາມດັນເລືອດສູງແມ່ນເພື່ອປ້ອງກັນຄວາມເສຍຫາຍຂອງອະໄວຍະວະສ່ວນປາຍ ແລະ ຫຼຸດຜ່ອນອັດຕາການຕາຍ.

**ຈຸດປະສົງ:** ເພື່ອສຶກສາອັດຕາການເກີດຄວາມດັນເລືອດສູງໃນເດັກອາຍຸ 1-15 ປີ ທີ່ເຂົ້າອນປົນປົງຢູ່ພະແນກເດັກຂອງໂຮງໝໍມະໂຫສິດ.

**ວິທີວິທະຍາ:** ຮູບແບບການສຶກສາແມ່ນ descriptive cross-sectional ໂດຍການກວດກັນຕ່ອງຄວາມດັນເລືອດສູງໃນເດັກອາຍຸ 1-15 ປີ ທີ່ເຂົ້າອນປົນປົງຢູ່ພະແນກເດັກໃນລະຫວ່າງ ວັນທີ 01/07/2021 – 31/01/2023 ຈຳນວນ 309 ຄົນ. ການສຶກສາໃຊ້ວິທີການສຳພາດຜູ້ປົກຄອງເດັກ ແລະ ຜູ້ເບິ່ງແຍງເດັກໂດຍການໃຊ້ແບບຟອມສອບຖາມເຊິ່ງແບບຟອມສອບຖາມຈະມີການທົດສອບແບບຟອມກ່ອນເກັບຂໍ້ມູນ ແລະ ວິເຄາະຂໍ້ມູນໂດຍໃຊ້ STATA ລຸ້ນທີ 14.

**ຜົນການຄົ້ນຄວ້າ:** ໃນເດັກຈຳນວນ 309 ຄົນ ທີ່ໄດ້ຮັບການກວດກັນຕ່ອງ ພົບອັດຕາການຄວາມດັນເລືອດສູງ 12.6%, ອາຍຸທີ່ພົບຄວາມດັນເລືອດສູງຫຼາຍທີ່ສຸດແມ່ນ 6-10 ປີ 39.0% ແລະ ພົບຄວາມດັນເລືອດສູງໃນເດັກຊາຍ 56.1% ຫຼາຍກວ່າຜູ້ຍິງ 43.9%. ປັດໃຈທີ່ກ່ຽວຂ້ອງກັບຄວາມດັນເລືອດສູງແມ່ນ ເດັກນ້ຳໜັກເກີນ/ຕຸ້ຍ ( $P<0.001$ ) ແລະ ມີພະຍາດປະຈຳໂຕເປັນພະຍາດໄຂ່ຫຼັງ ( $P<0.05$ ). ສາເຫດທີ່ພົບຫຼາຍຂອງຄວາມດັນເລືອດສູງແມ່ນ Secondary hypertension 84.6% (Sepsis induce AKI 36.4%, Post-Streptococcal Glomerulonephritis 21.2%, SLE with Lupus nephritis 12.1%). ອາການສະແດງທີ່ພົບຫຼາຍ ແມ່ນເຈັບຫົວ 65.8% ໃນຄວາມດັນເລືອດສູງຂັ້ນ II ແລະ 29.0% ໃນຄວາມດັນເລືອດສູງຂັ້ນ I, ປວດຮາກ 64.7% ໃນຄວາມດັນເລືອດສູງຂັ້ນ II ແລະ 32.4% ໃນຄວາມດັນເລືອດສູງຂັ້ນ I, ຮາກ 58.6% ໃນຄວາມດັນເລືອດສູງຂັ້ນ II, 38.0% ໃນຄວາມດັນເລືອດສູງຂັ້ນ I. ຊັກ ແລະ ເສຍສະຕີພິບໃນແຕ່ຄວາມດັນເລືອດສູງຂັ້ນ II. ການປິ່ນປົວຄວາມດັນເລືອດສູງແມ່ນໃຊ້ Calcium channel blockers 56.4%. ອັດຕາການຕາຍໃນການສຶກສາຄັ້ງນີ້ແມ່ນ 10.3%.

**ສະຫຼຸບ:** ໃນການສຶກສາຂອງເຮົາເປັນທີ່ຍອມຮັບວ່າອັດຕາຂອງການເກີດຄວາມດັນເລືອດສູງໃນເດັກທີ່ເຂົ້າອນໂຮງໝໍແມ່ນມີຄວາມສຳຄັນ ແລະ ອັດຕາການເກີດຄວາມດັນເລືອດສູງພົບຫຼາຍໃນເດັກອາຍຸ 6 ຫາ 10 ປີ ທີ່ມີສ່ວນພົວພັນກັບນ້ຳໜັກເກີນ/ເດັກຕຸ້ຍ ແລະ ເດັກນ້ອຍທີ່ມີພະຍາດໄຂ່ຫຼັງ. ກໍລະນີທີ່ພົບຫຼາຍທີ່ສຸດແມ່ນ Secondary hypertension ແລະ ການເສຍຊີວິດໃນກຸ່ມປະຊາກອນນີ້ແມ່ນມີຕົວເລກທີ່ສູງ ແລະ ເພື່ອຮັບປະກັນວ່າຈະຫາສາເຫດການຕາຍທີ່ແທ້ຈິງຈະຕ້ອງມີຄວາມລະອຽດທີ່ຈະຊອກຫາຄວາມດັນເລືອດສູງຕອນເຂົ້າອນໂຮງໝໍເພື່ອປ້ອງກັນບໍ່ໃຫ້ເກີດອາການສົນທິຮຸນແຮງ.

**ຄຳສັບຫຼັກ:** ອັດຕາການເກີດພະຍາດ, ການກວດກັນຕ່ອງຄວາມດັນເລືອດສູງ, ຄວາມດັນເລືອດສູງ, ໂຮງໝໍມະໂຫສິດ

\*ຕິດຕໍ່ກັບຜູ້ຂຽນ: ອຸໂລວັນ ວົງໄຊ, ເບີໂທ: +85620 77820 3258, ອີເມລ: oulaivanh1@hotmail.com