



ORIGINAL ARTICLE

## First report on simplified diagnostic criteria for pre-hypertension and hypertension in a national sample of adolescents from the Middle East and North Africa: the CASPIAN-III study<sup>☆</sup>

Roya Kelishadi<sup>a</sup>, Ramin Heshmat<sup>b</sup>, Gelayol Ardalán<sup>c</sup>, Mostafa Qorbani<sup>d,e</sup>, Mahnaz Taslimi<sup>f</sup>, Parinaz Poursafa<sup>g</sup>, Kasma Keramatian<sup>h</sup>, Majzoubeh Taheri<sup>c</sup>, Mohammad-Esmail Motlagh<sup>h,\*</sup>

<sup>a</sup> Pediatrics Department, Child Growth and Development Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

<sup>b</sup> Chronic Diseases Research Center, Endocrinology and Metabolism Population Sciences Institute, Endocrinology and Metabolism Research Institute, Tehran University of Medical Sciences, Tehran, Iran

<sup>c</sup> Bureau of Population, Family, and School Health, Ministry of Health and Medical Education, Tehran, Iran

<sup>d</sup> Department of Public Health, Alborz University of Medical Sciences, Karaj, Iran

<sup>e</sup> Department of Epidemiology, Iran University of Medical Sciences, Tehran, Iran

<sup>f</sup> School Health Department, Bureau of Health and Fitness, Ministry of Education, Tehran, Iran

<sup>g</sup> Environment Department, Environment Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

<sup>h</sup> Pediatrics Department, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Received 18 March 2013; accepted 19 June 2013

Available online 13 October 2013

### KEYWORDS

Blood pressure;  
Screening;  
Pre-hypertension;  
Hypertension;  
Adolescence

### Abstract

**Objective:** this study aimed to simplify the diagnostic criteria of pre-hypertension (pre-HTN) and hypertension (HTN) in the pediatric age group, and to determine the accuracy of these simple indexes in a nationally-representative sample of Iranian children and adolescents.

**Method:** the diagnostic accuracy of the indexes of systolic blood pressure-to-height ratio (SBPHR) and diastolic BPHR (DBPHR) to define pre-HTN and HTN was determined by the area under the curve of the receiver operator characteristic curves.

**Results:** the study population consisted of 5,738 Iranian students (2,875 females) with mean (SD) age of 14.7 (2.4) years. The prevalences of pre-HTN and HTN were 6.9% and 5.6%. The optimal thresholds for defining pre-HTN were 0.73 in males and 0.71 in females for SBPHR, and 0.47 in males and 0.45 in females for DBPHR, respectively. The corresponding figures for HTN were 0.73, 0.71, 0.48, and 0.46, respectively. In both genders, the accuracies of SBPHR and DBPHR in diagnosing pre-HTN and HTN were approximately 80%.

<sup>☆</sup> Please cite this article as: Kelishadi R, Heshmat R, Ardalán G, Qorbani M, Taslimi M, Poursafa P, et al. First report on simplified diagnostic criteria for pre-hypertension and hypertension in a national sample of adolescents from the Middle East and North Africa: the CASPIAN-III study. J Pediatr (Rio J). 2014;90:85–91.

\* Corresponding author.

E-mail: [mohammad-motlagh1389@yahoo.com](mailto:mohammad-motlagh1389@yahoo.com) (M.-E. Motlagh).

**PALAVRAS-CHAVE**

Pressão sanguínea;  
Triagem;  
Pré-hipertensão;  
Hipertensão;  
Adolescência

**Conclusions:** BPHR is a valid, simple, inexpensive, and accurate tool to diagnose pre-HTN and HTN in adolescents. The optimal thresholds of SBPHR and DBPHR were consistent with the corresponding figures in other populations of children and adolescents with different racial and ethnic backgrounds. Thus, it is suggested that the use of these indexes can be generalized in programs aiming to screen elevated blood pressure in the pediatric age group.

© 2013 Sociedade Brasileira de Pediatria. Published by Elsevier Editora Ltda.

Este é um artigo Open Access sob a licença de [CC BY-NC-ND](#)

### Primeiro relatório sobre critérios de diagnóstico simplificado para pré-hipertensão e hipertensão em uma amostra nacional de adolescentes do Oriente Médio e da África do Norte: o estudo CASPIAN-III

**Resumo**

**Objetivo:** este estudo visa simplificar os critérios de diagnóstico da pré-hipertensão (pré-HTA) e hipertensão (HTA) na faixa etária pediátrica e determinar a precisão desses índices simples em uma amostra nacionalmente representativa de crianças e adolescentes iranianos.

**Método:** a precisão diagnóstica dos índices de relação pressão arterial sistólica/altura (RPASA) e RPAA diastólica (RPADA) para definir a pré-HTA e HTA foi determinada pela área sob as curvas de características de operação do receptor.

**Resultados:** a população estudada contou com 5738 alunos iranianos (2875 meninas) com idade média (DP) de 14,7 (2,4) anos. A prevalência de pré-HTA e HTA foi 6,9% e 5,6%. Os limites ideais para a definição de pré-HTA foram 0,73 em meninos e 0,71 em meninas com relação à RPASA e 0,47 em meninos e 0,45 em meninas com relação à RPADA, respectivamente. Os valores correspondentes com relação à HTA foram 0,73, 0,71, 0,48 e 0,46, respectivamente. Em ambos os gêneros, a precisão de RPASA e RPADA no diagnóstico de pré-HTA e HTA foi de aproximadamente 80%.

**Conclusões:** a RPAA é uma ferramenta válida, simples, barata e precisa no diagnóstico da pré-HTA e HTA em adolescentes. Os limites ideais de RPASA e RPADA foram compatíveis com os números correspondentes em outra população de crianças e adolescentes com diferentes históricos raciais e étnicos, assim, sugerimos que a utilização desses índices possa ser generalizada em programas de triagem com relação à PA elevada na faixa etária pediátrica.

© 2013 Sociedade Brasileira de Pediatria. Publicado por Elsevier Editora Ltda.

Este é um artigo Open Access sob a licença de [CC BY-NC-ND](#)

**Introduction**

Hypertension (HTN) is a global health problem, and it is well-documented that increased blood pressure (BP) becomes established in childhood.<sup>1,2</sup> Nowadays, health care providers focus on the screening and treatment of hypertension in adults; however, they should also consider the importance of the BP tracking from early life and the increasing prevalence of pre-hypertension (pre-HTN) and HTN in the pediatric age group.<sup>3,4</sup> A growing body of evidence indicates not only that HTN gradually damages the function of vital organs, but also that pre-HTN has the same harmful effects.<sup>5,6</sup>

The fourth report on the diagnosis, evaluation, and treatment of high BP in children and adolescents emphasized that all children older than 3 years attended to in a medical setting should have their BP measured.<sup>7</sup> Since pre-HTN and HTN in children are classified as systolic BP (SBP) and/or diastolic BP (DBP) between 90<sup>th</sup> and 95<sup>th</sup> percentile, and  $\geq$  95<sup>th</sup> percentile, respectively, and considering that the accurate diagnosis of high BP requires adjusting the values for age, gender, and height, the interpretation of the BP level is time-consuming and difficult to use. This is a probably reason why, in many countries, BP measurement is not an integrated part of physical examination for healthy children. Providing simple indexes for interpreting the BP levels would increase the knowledge regarding the BP status of children and adolescents, and would help to identify those who need

further follow-up for definitive diagnosis of HTN. In some populations, simplified indexes, such as SBP-to-height ratio (SBPHR) and DBP-to-height ratios (DBPHR), have been used for easy interpretation of BP levels in the pediatric age group.<sup>8,9</sup> These studies have recommended determining the sensitivity and specificity of these indexes in various populations. Education regarding the prevalence of elevated BP in the pediatric population would be useful for policy makers, in order to highlight the importance of training health professionals about integrating BP measurement and tracking in healthy children, and to increase the public awareness about the importance of prevention and control of pre-HTN from early life.

This study aimed to simplify the diagnostic criteria of pre-HTN and HTN in children and adolescents, and to determine the accuracy of these simple indexes in a nationally-representative sample of Iranian children and adolescents, as the first national study of its kind in the pediatric population of the Middle East and North Africa (MENA).

**Methods****Study population**

The data used in this study were collected as a part of the national survey of school students' high risk behaviors (2009-2010) as the third survey of the school-based

Download English Version:

<https://daneshyari.com/en/article/4154125>

Download Persian Version:

<https://daneshyari.com/article/4154125>

[Daneshyari.com](https://daneshyari.com)