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RISK FACTORS FOR SYSTEMIC HYPERTENSION IN CHILDREN FATORES DE RISCO PARA HIPERTENSÃO ARTERIAL SISTÊMICA EM CRIANÇAS FACTORES DE RIESGO PARA LA HIPERTENSIÓN SISTÉMICA EN NIÑOS

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ABSTRACT

Objective: describing the risk factors for hypertension in children. **Method:** a descriptive cross-sectional study with a quantitative approach, conducted with 109 children in three public elementary schools in João Pessoa-Paraíba. Data were collected in March and April 2009 using a questionnaire that identified risk indicators for childhood hypertension, after the research project has been approved by the Research Ethics Committee, Protocol No. 1071/07. **Results:** there was identified that 13,8% of students have the risk factor for overweight and obesity development of hypertension. Regarding parental education / parents there was a higher percentage of mothers (31,1%) and parents (32%) who have not completed elementary education. As family income, 35,8% reported owning between 1 and 2 wages. **Conclusion:** it should aware the students, parents, teachers and health professionals involved in making inherent to education and prevention of hypertension conducts. **Descriptors:** Risk Factors; Hypertension; Children.

RESUMO

Objetivo: descrever os fatores de risco para hipertensão arterial sistêmica em crianças. **Método:** estudo descritivo, transversal, com abordagem quantitativa, realizado com 109 crianças em três escolas públicas do Ensino Fundamental de João Pessoa-PB. Os dados foram coletados em março e abril de 2009 utilizando-se um questionário que identificou os indicadores de riscos para hipertensão arterial sistêmica infantil, após o projeto de pesquisa ter sido aprovado pelo Comitê de Ética em Pesquisa, protocolo nº 1071/07. **Resultados:** identificou-se que 13,8% dos escolares apresentam o fator de risco sobrepeso e obesidade para o desenvolvimento da HAS. Com relação à escolaridade dos pais/genitores houve um maior percentual de mães (31,1%) e pais (32%) que possuem o ensino fundamental incompleto. Quanto à renda familiar, 35,8% relatou possuir entre 1 e 2 salários. **Conclusão:** deve-se conscientizar os discentes, pais, professores e profissionais da saúde envolvidos na realização de condutas inerentes à educação e prevenção da Hipertensão Arterial Sistêmica. **Descritores:** Fatores de Risco; Hipertensão; Crianças.

RESUMEN

Objetivo: describir los factores de riesgo para la hipertensión en los niños. **Método:** estudio descriptivo transversal, con enfoque cuantitativo, realizado con 109 niños en tres escuelas primarias públicas en João Pessoa-Paraíba. Los datos se recogían en marzo y abril de 2009 mediante un cuestionario que identifica los indicadores de riesgo para la hipertensión infantil, después de que el proyecto de investigación haya sido aprobado por el Comité de Ética de la Investigación, Protocolo nº 1071/07. **Resultados:** identificó se que el 13,8% de los estudiantes tienen el factor de riesgo de sobrepeso y obesidad para el desarrollo de la hipertensión. En cuanto a la educación de los padres / genitores había un mayor porcentaje de las madres (31,1%) y los padres (32%) que no han terminado la educación primaria. Quanto al ingreso familiar, el 35,8 % reportó ser dueño de entre 1 y 2 salarios. **Conclusión:** si debe concienciar los estudiantes, padres, profesores y profesionales de la salud involucrados en la toma inherente a la educación y la prevención de la hipertensión. **Descriptores:** Factores de Riesgo; Hipertensión; Niños.

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INTRODUCTION

The systemic arterial hypertension (SAH) is a multifactorial syndrome that is characterized by elevated blood pressure levels enabling the emergence of cardiovascular and metabolic abnormalities that can lead to functional and/or structural changes in the body.¹ The recognition of the increased prevalence of hypertension in younger and its complications in adult life population has important implications for the prevention of chronic diseases, especially cardiovascular.²

Although dominant in adulthood, the prevalence of hypertension in children and adolescents is not negligible. Around the world varies widely in reports of several national and foreign authors reaching 13% of people in this age group, depending primarily on the methodology (criteria used for normality, age, number of visits, number of measurements per visit and time monitoring). In Brazil, the prevalence of hypertension in children and adolescents can vary between 6% and 8%.¹

It is noticed that the numbers of cases of Hypertension in Children are continually increasing, mainly due to the pediatric obesity epidemic. The diagnosis of this condition in children is complicated because the normal and abnormal blood pressure values vary with the age, gender and height and therefore it is difficult to establish accurately.³

Actions of health promotion related to changes in lifestyle represent the possibility of more effective prevention of cardiovascular events. Studies on the detection of risk indicators in young populations are essential for monitoring individuals at greatest risk of changes in adulthood. Among the many indicators that contribute to the development of hypertension in children and adolescents include: the high initial levels of blood pressure, family history, obesity, physical inactivity, smoking and alcohol use.⁴

Based on this understanding, it is understood that it is common for the occurrence of concomitant risk factors involved in this morbidity, which contributes to the development of associated complications, translating it as an important and serious public health problem. In this context, it is highlighted that the multitude of consequences of hypertension puts the origin of cardiovascular diseases and therefore characterized as one of the biggest causes of

reduced quality and life expectancy of individuals.⁵

Given the above, it can be stated that SAH is a public health problem that requires natural interventions, either to preventing it or controlling it. In this sense, the identification of risk factors of this condition in children is a key to health promotion in the context of cardiovascular disease aspect, providing an opportunity so that we can intervene early.

This study aims to describe the risk factors for Hypertension in children.

METHOD

A descriptive, cross-sectional study with a quantitative approach, performed in public elementary schools in João Pessoa/Paraíba. The study included 109 children. The selection met the following criteria: children with age between seven and eleven years of age, enrolled in school and they were accompanied by a parent/guardian, by signing the consent form (ICF). Exclusion criteria: children aged greater than or less than the age mentioned and were not accompanied by a parent/guardian.

Data were collected by the researchers in the period from March to April 2009 in three public elementary schools located in the city of João Pessoa-PB. To collect data, we used a questionnaire applied by the responsible for the child, identifying the socioeconomic characteristics of the parents/ guardians that characterized risk factors for Hypertension child. The collection was made before or after the end of classes, at which time the charge made or would fetch the child at school. There were also collected anthropometric data of school in order to identify the body mass index (BMI) of the participants. It is noteworthy that due to the material (stationary scale) in one of the educational institutions, disability has not been possible to check the BMI across the sample group.

The data were originally stored in the Microsoft Office Excel spreadsheet and were later transferred to Statistical Package for Social Science (SPSS) version 18.0, where the construction of the statistical analysis was performed. Thus, to achieve the proposed goal, we used the technique of descriptive and exploratory data analysis. The data were discussed in light of the literature.

The present study was taken from the Final Report of the Research Project of Scientific Initiation/CNPq/UFPB entitled self-care deficit in students with risk of hypertension,

meeting the requirements of Resolution 466/12 of the National Council of Health ⁶ that regulates research involving human subjects and was approved by the Research Ethics Committee of the Center for Health Sciences (CEP/CCS), Federal University of Paraíba/UFPB, and is registered under protocol No. 1071/07.

RESULTS AND DISCUSSION

According to the definition of the sample, the age range of the children was 7-11 years old. Regarding gender, most individuals are female, represented by a percentage of

59,6%, while the male is represented by 40,4% of children. All survey participants were from the 2nd to 5th year of elementary school. Among them, 12,8% are enrolled in the 2nd year, 24,8% the 3rd year, 34,9% of the 4th year and 27,5% the 5th year of this level of education.

In Table 1, we have the distribution of the sample according to age and body mass. The amounts related to these aspects are expressed in absolute terms and percentages calculated relative to the total number of children.

Table 1. Study sample distribution according to age and body weight. João Pessoa-PB, 2009.

Age (in years)	BMI							
	Low Weight		Healthy		Overweight		Obesity	
	Nº	%	Nº	%	Nº	%	Nº	%
7	2	1,83	11	10,09	2	1,83	1	0,91
8	2	1,83	15	13,76	4	3,66	1	0,91
9	4	3,66	15	13,76	4	3,66	0	0
10	5	4,58	11	10,09	1	0,91	1	0,91
11	0	0	3	2,75	1	0,91	0	0
Total	13	11,9	55	50,5	12	11,0	3	2,8

It is noteworthy that, due to the material (ergometric scale) in one of the educational institutions surveyed, there was not possible to check the body mass index (BMI) across the sample group, however it was possible to achieve 76,1% of the sample. Through the data it is possible to observe that 13,8% of students have the risk factor for overweight and obesity development of hypertension, and a very considerable number indicating the need to monitor these children.

Obesity prevalence is increasing its expressive way around the world, a fact that prompted the World Health Organization to classify this situation as epidemic. This increase occurred in all age groups, both in developed countries and in developing countries. It is determined by conditions of multifactorial origin, whose development is influenced by biological, psychological and socioeconomic factors. For both the prevalence of obesity is growing strongly in childhood and adolescence, and tends to persist into adulthood: about 50% of obese at six months of age, and 80% of overweight at five years of age, remain obese.⁷

The risk of child obesity causes bad reflections in adulthood and it is very high. This comorbidity is strongly associated with the development of coronary heart disease in

adulthood.⁸ In a study in an American school with children of school age, high BMI was a risk factor for increased mortality before 55 years of age, thus demonstrating that overweight and obesity, in fact corresponds to a risk for development of childhood hypertension.⁹

During childhood obesity may be due to dietary habits and lifestyle, unavailability of parents on the achievement of essential care and lack of knowledge on the part of children, the risks caused by this disorder. Moreover, socioeconomic conditions contribute to the development of obesity through low education, low income and occupation, factors that result in different behavioral patterns, which in turn, determine the caloric intake, energy expenditure and the rate of the metabolism.¹⁰ This perspective, the increase in body mass requires an increase in cardiac output and intravascular volume to meet the increase in metabolic demand, thus the cardiac workload is greater in overweight or obese, resulting in an increase in your blood pressure.¹¹

In order to understand the conditions for integration of these children in the family environment, we tried to verify the educational level of parents/genitors, presented in Table 2.

Table 2. Sample distribution by educational level of parents/children's providers. João Pessoa-PB, 2009.

Educational level	Father/Provider		Mother/Provider	
	n°	%	n°	%
Illiterate				
Primary school Complete	3	2,8		
Primary school Incomplete	12	11	0	0
High school Complete	32	29,3	8	7,3
High school Incomplete	15	13,7	34	31,2
Higher education	4	3,7	23	21,1
	4	3,7	6	5,5
			3	2,8
Total	70	64,2	74	67,9
Does not know	39	35,8	35	32,1
Total	109	100	109	100

Schooling corresponds to an element of paramount importance when dealing with access to health services, communication with health professionals, the consequent effectiveness of prevention, treatment and cure of diseases, as well as with regard to the processes of integration, by the population, the concepts of health and disease.

Analyzing the data in table 2, one can conclude that a higher percentage of mothers (31,1%) and parents (32%) had incomplete primary education. Therefore, we conclude that a larger quantity of parents have a low level of education, suggesting a greater predisposition of children participating in the research to the development of diseases, including hypertension, since this risk factor has a high index.

Research shows that individuals who attended school for a shorter period of time as well as those who report not having an occupation, had a significantly higher prevalence of hypertension.¹² In this sense, there is a trend in the decrease of the mean arterial pressure and the proportion of hypertension as the level of education increases, so is the level of education an important factor in the development of this condition. Also, issues such as income distribution of parents/providers of the subjects were analyzed. In Table 3, are expressed in minimum wages, the results obtained on household income children participating in the study.

Table 3. Distribution of the income of the parents/children's providers. João Pessoa-PB, 2009.

Number of salaries	n	%
< than 1 salary	31	28,4
1 - 2 salaries	39	35,8
2 - 3 salaries	6	5,5
3 - 4 salaries	2	1,8
4 - 5 salaries	3	2,8
Total	81	74,3
Did not contest	28	25,7
Total	109	100,0

As shown in Table 3, 28,4% of parents of schoolchildren said their family income is less than 1 minimum wage; a higher percentage (35,8%) reported having income between 1 and 2 wages; 5,5% of households have income between 2 and 3 minimum wages, while 2,8% have incomes between estimated 3-4 wages; the lowest percentage (1,8%) of respondents whose income was between 3 and 4 times the minimum wage.

Family income has close relation with the level of parental education. The education of members of a family influence employment opportunities and wages, and thus determines its own financial condition. In addition, child health care depend on factors such as the availability of adequate food, housing, and access to essential services such as sanitation

and health care, these factors depend on the purchasing power of families.¹³

The results of studies in 98 municipalities indicated that mortality from cardiovascular disease mainly affects socioeconomically underprivileged populations. Therefore, the higher the income, the greater opportunity to access goods and services, including quality education and health care with effective diagnostic and therapeutic resources, including skilled and sophisticated diagnostic equipment.¹⁴

In contrast, a study conducted in England presented results that suggest that family income is not a major determinant of child health, but it was evident that nutrition and lifestyle of the family play an important role in determining the health of child.¹⁵ Thus,

socioeconomic status assessed by income and level of education is directly related to several risk factors for obesity, smoking and hypertension. Thus, in general, the lower the purchasing power level higher cardiovascular risk. This relationship is due to several possible causes: differences in lifestyle, the low quality of health services, limited access to health care and health education, psychosocial stress, physical activity level, type of food, among others.¹²

CONCLUSION

This study may support a schedule of educational activities aimed at awareness among students, parents, teachers and health professionals involved in caring for these children, about the importance of conducting inherent to education and prevention of hypertension in childhood and other factors of cardiovascular risk as well as its control among those carriers of the disease. Thus, they may act as multipliers of the promotion of health, trying to eliminate as much risk factors and providing welfare to school and family.

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