Original Research Article

A study of prevalence of hypertension and its associated factors in school children

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Abstract

Background: Systemic hypertension has been considered to be associated with adult population. But off late increase numbers of children are also being affected. **Aims and Objectives:** To Study prevalence of Hypertension and its associated factors in school children **Methodology:** This was a Cross -sectional study carried out among the School going children in the age between 7-16 with respect to Prevalence of Hypertension in the one month i.e. January 2016 to February 2016. Totally 1075 students after the consent of Parents were enrolled into study in all the students the basic anthropometric measurement were done and BMI in all of them was calculated, all the important history like family history of Hypertension, Diabetes. The statistical analysis done by Chi-square test/trend calculated by SPSS version 19. **Result:** The prevalence of Hypertension for Males in 7-10 was 3.47%, followed by in 10-13 was 12.65%, and in 13-16 was 23.36%, this increasing trend with increase in age of Hypertension was statistically significant ($\chi 2$ =33.64, df=1,< 0.0001) and also for Female 07-10 was 1.61%, 10-13 was 6.19%, in 13-16 was 6.40% for females also this increasing trend with increase in age of Hypertension was statistically significant ($\chi 2$ =4.267, df=1, P< 0.0389) Associated factors significantly associated with Hypertension in children's were Obesity ($\chi 2$ =319.7, df=1, P< 0.0001), Family history of HTN and IHD ($\chi 2$ =464.8, df=1,P<0.0001). Family history of Diabetes ($\chi 2$ =392.1, df=1, P<0.0001) **Conclusion:** It can be concluded from our study that prevalence of hypertension was increased in students as their age increases also the significantly associated factor with Hypertension were Obesity, Family history of HTN and IHD, Family history of Diabetes.

Key Words: Hypertension (HTN) in school children, Ischemic Heart Disease (IHD), Diabetes.

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INTRODUCTION

Systemic hypertension has been considered to be associated with adult population. But off late increase numbers of children are also being affected. Childhood hypertension is an established predictor of adult hypertension and organ damage, and it is underestimated problem in developing countries. An increasing number of healthy children and adolescents across the world are being diagnosed with HTN[1]. Normal blood pressure values for children and adolescents are based on age, gender, and height, and are available in standardized tables. Primary HTN, once considered a rare occurrence in pediatric patients, is seen more often particularly in obese patients. Other factors responsible for increased prevalence of hypertension in children include life style changes such as decrease physical activity, increased intake of high calories, high sodium and low potassium foods, use of caffeinated and alcohol beverages, smoking, mental stress and sleep deprivation[2]. High blood pressure (BP) in children has been considered as a potential risk factor for hypertension in adulthood. Blood pressure varies with age, sex and height in children; therefore the diagnosis is complicated and nearly 75% of hypertensive children remain undiagnosed [3]. The prevalence of hypertension in our study was higher as compared to some earlier studies from similar setting [4,5]. This could be

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due to different socio-demographic characteristics. The prevalence of pre-hypertension in our study was similar to that of study done by Rahman, *et al*[5]. Increasing prevalence of hypertension might be due to childhood obesity as well as growing awareness of the diseases [5-8].

MATERIAL AND METHODS

This was a Cross -sectional study carried out among the School going children in the age between 7-16 with respect to Prevalence of Hypertension in the one month i.e. January 2016 to February 2016. Totally 1075 students after the consent of Parents were enrolled into study in all the students the basic anthropometric measurement were done and BMI in all of them was calculated, all the important history like family history of Hypertension, Diabetes. For the Obesity the WHO growth carts were used ; if BMI was more than 95th percentile were considered as Obese. And for the diagnosis of Hypertension BP measuring apparatus (OMRON) was used. Hypertension was defined as average systolic BP and/or diastolic BP ≥95th percentile for gender, age, and height on ≥3 occasions. The statistical analysis done by Chi-square test/trend calculated by SPSS version 19.

RESULT

Table 1: Age and sex wise distribution

	Hypertensive	Normotensive	Total	P-value (χ2-Treand)
Males (Yrs.)	55 (10.34)	477 (89.66)	532 (100)	χ2 =33.64, df=1 < 0.0001 ***
7-10	9(3.47)	250 (96.53)	259 (100)	
10-13	21 (12.65)	145 (87.35)	166 (100)	
13-16	25(23.36)	82 (76.64)	107 (100)	
Female (Yrs.)	26(4.79)	517(95.21)	543 (100)	χ2 =4.267, df=1 0.0389, *
07-10	3(1.61)	174(98.31)	177 (100)	
10-13	12(6.19)	182(93.81)	194 (100)	
13-16	11(6.40)	161(93.60)	172 (100)	

The prevalence of Hypertension for Males in 7-10 was 3.47%, followed by in 10-13 was 12.65%, and in 13-16 was 23.36%, this increasing trend with increase in age of Hypertension was statistically significant (χ2 =33.64, df=1,< 0.0001***) and also for Female 07-10 was 1.61%, 10-13 was 6.19%, in 13-16 was 6.40% for females also this increasing trend with increase in age of Hypertension was statistically significant (χ2 =4.267, df=1, P< 0.0389, *)

Table 2: Distribution of the students as per associated factors

Associated Factor	Hypertension	Normal	Total	P-Value
Obesity				
Present	81(7.53)	994(92.47)	1075 (100)	χ2 =319.7, df=1, P< 0.0001, ***
Absent	42 (42.42)	57(57.58)	99 (100)	
Family history of HTN and IHD				
Yes	12(1.23)	964(98.77)	976 (100)	χ2 =464.8, df=1,P<0.0001, ***
No	52(55.32)	42(44.68)	94 (100)	
Family history of Diabetes				
Yes	39(50.65)	38(49.35)	77 (100)	χ2 =392.1, df=1 P<0.0001, ***
No	10(1.04)	956(98.96)	966 (100)	

Associated factors significantly associated with Hypertension in children's were Obesity (χ2 =319.7, df=1, P< 0.0001, ***), Family history of HTN and IHD (χ2 =464.8, df=1,P<0.0001, ***). Family history of Diabetes (χ2 =392.1, df=1, P<0.0001,***)

DISCUSSION

Hypertension is a potential risk factor for atherosclerosis of coronary, renal and cerebral vessels with fatal effects[8]. It is, therefore, necessary to study the normal range of blood pressure values so as to demarcate the level over which children may be called hypertensive. In our study we have found that the prevalence of Hypertension for Males in 7-10 was 3.47%, followed by in 10-13 was 12.65%, and in 13-16 was 23.36%, this increasing trend with increase in age of Hypertension was statistically significant (χ2 =33.64, df=1,< 0.0001) and also for Female 07-10 was 1.61%, 10-13 was 6.19%, in 13-16 was 6.40% for females also this increasing trend with increase in age of Hypertension was statistically significant (χ2 =4.267, df=1, P< 0.0389,). Associated factors significantly associated with Hypertension in children's were Obesity (χ2 =319.7, df=1, P< 0.0001), Family history of HTN and IHD (χ2 =464.8, df=1, P<0.0001). Family history of Diabetes (χ2 =392.1, df=1, P<0.0001). These findings are similar to various studies they found; Obesity and family history of hypertension were found to be important influencing factors in the development of hypertension in the present study. Fifty two per cent of the asymptomatic hypertensive children were found to be obese as compared to 62.5%, 53% and 63% in various studies[9,10,11,12,13,14]. Hypertension in obese children may

occur due to: increased cardiac output, increased blood volume, excessive sodium intake, increased steroid production and alteration in receptors for various pressor substances[13-15]. An association between family history of hypertension and hypertension in children has also been found by various workers [13-16].

CONCLUSION

It can be concluded from our study that prevalence of hypertension was increased in students as their age increases also the significantly associated factor with Hypertension were Obesity, Family history of HTN and IHD, Family history of Diabetes.

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