

A study of prevalence of hypertension in adolescents at urban area of Muzzafarpur, Bihar

Ravindar Prasad^{1*}, Prabhas Kumar², Prabhat Kumar Lal³, Hemant Kumar⁴

¹Assistant Professor, Department of Community Medicine, Sri Krishna Medical College, Muzaffarpur, Bihar, INDIA.

^{2,3}Assistant Professor, ⁴Tutor, Department of community Medicine, Darbahnaga Medical College, Laheriasarai, Bihar, INDIA.

Email: dr.hemu71@gmail.com

Abstract

Background: The World Health Organization (WHO) describes overweight obesity and hypertension as one of today's most important public health problems, which is escalating as a global epidemic. **Aims and Objectives:** To Study Prevalence of Hypertension in Adolescents at urban area. **Methodology:** This was a Observational study carried out among the adolescent population at urban filed practice area in the age between 10-19 in one month i.e. January 2017 to February 2017. Totally 378 adolescents of urban filed practice area after the consent of Parents were enrolled into study. The statistical analysis done by Chi- square test/trend calculated by SPSS version 19. **Result:** The overall prevalence of Hypertension was 28.58%, highest in the age group of 16-19 i.e. 36.26% and 22.29% in 13-16 age group, 17.95 % in 10-13 age group, this increasing trend of hypertension with increase age was statistically significant ($X^2 = 10.72$, $df=2$, $p<0.0047$). The prevalence of hypertension was more in Males i.e. 36.37% and in Females was 20.00% and this was statistically significant ($X^2 = 12.37$, $df=1$, $p<0.0004$). Associated factors with Hypertension were Obesity (BMI> 30) ($Z=4.56$, $p<0.05$), Family history ($Z=3.51$, $p<0.05$), Associated with addictions ($Z=2.96$, $p<0.05$) **Conclusion:** It can be concluded from our study that overall prevalence of hypertension in adolescents of urban area was quite high specially in males and associated risk factors were Obesity (BMI>30), Family history and associated addictions.

Key Words: Hypertension in Adolescents, urban adolescents, Obesity (BMI>30).

* Address for Correspondence:

Dr. Ravindar Prasad, Assistant Professor, Department of Community Medicine, Sri Krishna Medical College, Muzaffarpur, Bihar, INDIA.

Email: dr.hemu71@gmail.com

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INTRODUCTION

The World Health Organization (WHO) describes overweight obesity and hypertension as one of today's most important public health problems, which is escalating as a global epidemic¹. It is also increasingly recognized as a significant problem in developing countries and countries under going economic transition². The importance of hypertension in the pediatric population has not been as well appreciated as in adults. Children with elevated

blood pressure (BP) can develop target organ damage³, and they are also at increased risk of cardiovascular disease in adulthood⁴. Consequently, detection and management of elevated BP at an early age may be an important means for limiting the disease burden due to hypertension⁵. The prevalence of hypertension among children in several recently conducted studies in Western countries ranged from 7 to 19%⁶.

MATERIAL AND METHODS

This was Observational study carried out among the adolescent population at urban filed practice area in the age between 10-19 in one month i.e. January 2017 to February 2017. Totally 378 adolescents of urban filed practice area after the consent of Parents were enrolled in to 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, associated factors like addiction (any smoking, chewing, or any other form of tobacco were considered as addiction) were studied. For assessing

Obesity the WHO growth charts 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 $\geq 95^{\text{th}}$ 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 wise distribution of the patients

	Hypertensive	Normotensive	Total
10-13	7 (17.95)	32 (82.05)	39
13-16	35 (22.29)	122 (77.70)	157
16-19	66 (36.26)	116 (63.73)	182
Total	108 (28.58%)	270 (71.42%)	378 (100)

($X^2 = 10.72$, $df=2$, $p<0.0047$)

The overall prevalence of Hypertension was 28.58%, highest in the age group of 16-19 i.e. 36.26% and 22.29% in 13-16 age group, 17.95 % in 10-13 age group this increasing trend of hypertension with increase age was statistically significant ($X^2 = 10.72$, $df=2$, $p<0.0047$)

Table 2: Sex wise distribution of the patients

	Hypertensive	Normotensive	Total
Male	72(36.37%)	126 (63.63%)	198 (100.00)
Female	36 (20.00%)	144 (80.00%)	180 (100.00)
Total	108 (28.58%)	270 (71.42%)	378 (100.00)

($X^2 = 12.37$, $df=1$, $p<0.0004$)

The prevalence of hypertension was more in Males i.e. 36.37% and in Females was 20.00% and this was statistically significant ($X^2 = 12.37$, $df=1$, $p<0.0004$)

Table 3: Distribution of the patients as per the associated factors

Associated factor	Hypertensive (108)	Normotensive (270)	p-value (Z-test)
Obesity (BMI> 30)	39 (36.11%)	32(11.85%)	Z=4.56, $p<0.05$
Family history	23 (21.29%)	21 (7.77%)	Z=3.51, $p<0.05$
Associated with addictions	19 (17.60%)	17(6.29%)	Z=2.96, $p<0.05$

Associated factors with Hypertension were Obesity (BMI> 30) (Z=4.56, $p<0.05$), Family history (Z=3.51, $p<0.05$), Associated with addictions (Z=2.96, $p<0.05$)

DISCUSSION

Knowledge and awareness of hypertension are important factors in early diagnosis as well as achieving blood pressure control but the awareness of HTN was suboptimal as only 28.25% among the 400 students had some awareness about hypertension. As in general all the

86 subjects who were found to be hypertensive were absolutely asymptomatic and 2 of them were known hypertensive's on medication, which further implicates the need to create knowledge and awareness among school students which is a growing public health problem. Similar result has been observed in a study done by Alexander *et al.* published in 2003^{7,8,9}. There is an overwhelming evidence in these study that the prevalence of HT is high among obese individuals ($p=0.000$), which is highly significant. This also confirms results of done by Jonathan *et al.* indicated obesity and overweight has major risk factors in hypertension¹⁰. John F Hall study also showed similar finding that chronic obesity also causes marked structural changes in the kidneys that eventually lead to a loss of nephron function, further increasing the arterial pressure. Indian study done by Ruchika *et al.* in Delhi among school children, published in 2010^{11,12}. The prevalence of hypertension was very high (41.86%) among children of hypertensive parents (either father or mother or both). These study strongly supports the fact that increase in prevalence of adolescent HT is highly significant among parents with hypertension. Similar relationship was found in Sharma *et al.* a study done among Delhi school students^{13, 14}. This study result also agrees with another work done by KA Jamerson *et al.* in U.S¹⁴. In our study we have seen that The overall prevalence of Hypertension was 28.58%, highest in the age group of 16-19 i.e. 36.26% and 22.29% in 13-16 age group, 17.95% in 10-13 age group this increasing trend of hypertension with increase age was statistically significant ($X^2 = 10.72$, $df=2$, $p<0.0047$). The prevalence of hypertension was more in Males i.e. 36.37% and in Females was 20.00% and this was statistically significant ($X^2 = 12.37$, $df=1$, $p<0.0004$). Associated factors with Hypertension were Obesity (BMI> 30) (Z=4.56, $p<0.05$), Family history (Z=3.51, $p<0.05$), Associated with addictions (Z=2.96, $p<0.05$) This is in accordance with Jasmine S Sundar *et al*¹⁵ they found prevalence of Adolescent hypertension was 21.5%. MANOVA showed there was significant ($p<0.05$) effect on gender, class of study, body mass index, waist hip ratio. Chi-square showed significant association for same variables including parent history of hypertension. The major determinants were found to be increased Body mass index and decreased physical activity (ODD's ratio>3).

CONCLUSION

It can be concluded from our study that overall prevalence of hypertension in adolescents of urban area was quite high specially in males and associated risk factors were Obesity (BMI >30), Family history and associated addictions.

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