



Hypertension among School Going Adolescent of Jaipur City and Its Associating Socio-Demographic Factors: A Cross Sectional Study

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ABSTRACT

Background: Although Hypertension is a problem of adult, the etiologic process and risk behaviour start early in life. The present study was conducted to find out prevalence of hypertension among school going children in the age group 10-19 years. And to determine socio-demographic factors associated with hypertension in adolescent school children.

Material and Methods: A cross-sectional study was done among 1008 school adolescents in Jaipur city, data was collected by pre-designed semi structured questionnaire and anthropometric measurements was done along with taking blood pressure. Analysis was done using MS Excel and statistical software Primer version 6.

Results: A total of 1008 students studied having mean age 14.26 years and M:F ratio was 1.24. Prevalence of hypertension was found 15.87%. Although hypertension was found more in male, among age group of 17-19 years (18.72 %), Hindu, SC category and students of among class I high socio-economic status families than their counterparts, but it was found not significant except for cast.

Conclusion: Prevalence of hypertension among school going adolescent was found 15.87%. It was found to be associated with caste only not with other studied variables like age, sex, religion, socio economic status and family history of hypertension.

Keywords: Prevalence, Adolescent Hypertension, School going adolescent

INTRODUCTION

Adolescence are between the age group of 10 to 19 years.¹ It is the period of life with intense physical, psychosocial, and cognitive development. There are 1.2 billion adolescents in world and 88% of them are from developing countries.² India has 243 million adolescent people constituting about 21.4% of the country's total population.³

Hypertension is an emerging public health problem worldwide.⁴ It is most prevalent cardiovascular disease risk factor. High blood pressure is a major risk factor for stroke, CHD, heart or kidney failure.⁵ It is one of the leading cause of death and

disability worldwide. Although it is a problem of adult, but the etiologic process and risk behaviour start early in life.⁶ It can be initiated in childhood but can go undetected unless specifically looked for in this period.⁷

Hypertension is multifactorial disease, influenced by age, sex, genetic, racial, geographic, cultural and dietary pattern etc.⁷ Childhood hypertension is an established predictor of adult hypertension and organ damage.

Interest in childhood hypertension (HTN) has increased since the 2004 publication of the "Fourth Report on the Diagnosis, Evaluation, and Treat-

ment of High Blood Pressure in children and adolescent.⁸ Study of blood pressure in adolescents and early detection of high blood pressure may improve its management and thus, help to lower morbidity and mortality because earlier the prevention starts; more likely it is to be effective. Early diagnosis, treatment along with lifestyle modification is essential for management of hypertension.

There is lack of studies regarding adolescents hypertension in Rajasthan, the present study was conducted to find out the prevalence of hypertension and its association with socio-demographic factors in school going adolescents (10-19 years) of Jaipur city, Rajasthan.

METHODOLOGY

This present study is a quantitative, cross-sectional, descriptive type of observational study conducted from 1st July 2019 to 10 December 2019 among school going adolescents of 10 to 19 years age who were selected from 6th to 12th class of selected schools of Jaipur city.

The study was conducted by categorizing all schools of Jaipur city into government and private schools in each zone of the city (East, West, North and South). Two schools, one government and one private, were selected from each of the four zones. Thus total eight schools were selected.

Sample size was calculated 908 at 95% confidence and 2% absolute allowable error assuming prevalence of hypertension 10.1% in school children (as per seed article).⁹ So for the study purpose, 1008 adolescent school children will be taken with 10% attrition. The total number of selected adolescent students were 1008 from selected eight schools i.e. 126 students from each of selected eight schools.

A predesigned semi structured questionnaire was used for data collection. The proforma included 'School information schedule' including general information about school. And 'Adolescent child information schedule' including information about adolescent. After taking written informed consent of principal of the selected school desired information were gathered as per 'School information schedule'. And for taking the desired information as per 'Adolescent child information schedule' procedure was explained to the children, BP was measured in the right arm by the auscultatory method using a standard automatic electronic digital manometer, measurements were recorded as per the recommendations of the American Heart Association.¹⁰ Children with SBP and/or DBP equal to or greater than the 130/90 were considered to be hypertensive.¹¹

RESULT

Maximum proportion of the study population were in the age group of 14-16 years (41.67%), followed by 10-13 years (39.78%) while least in the age group of 17-19 years (18.55%). Mean age was 14.26 with standard deviation 2.22 years. The present study group consisted of 557 males (55.26%) and 451 females (44.74%). Maximum proportion of study population belonged to Hindu community (87.20%) followed by Muslim community (12.80%). Maximum proportion of study population belonged to general category (36.21%) followed by other backward caste (28.17%), schedule castes (25.79%) and least students belonged to schedule tribes (9.82%). Most of the study population belonged to Nuclear type of family (76.19%) followed by Joint type of family (23.81%). Maximum proportion of study population belonged to Class IV Socio-economic status of families (30.56%) followed by Class III (26.39%), Class II (21.73%), Class V (12.70%) while least proportion of study population belonged to Class I (8.63%). Mean per capita monthly income was 3155.45 rupees with standard deviation was 2380.61 rupees. Only 28.67% students having positive family history of hypertension. (Table 1)

Table 1: Characteristics of study population (n=1008)

Variables	Students (%)
Age Group	
Early adolescent (10-13 years)	401 (39.78)
Middle adolescent (14 -16 years)	420 (41.67)
Late adolescent (17-19 years)	187 (18.55)
Sex	
Female	451 (44.74)
Male	557 (55.26)
Religion	
Hindu	879 (87.2)
Muslim	129 (12.8)
Caste	
General	265 (26.29)
OBC	284 (28.17)
SC	260 (25.79)
ST	99 (9.82)
Type of Family	
Nuclear	768 (76.19)
Joint	240 (23.81)
Family Size	
up to Four	220 (21.83)
4-8 Number	602 (59.72)
Nine and Above	186 (18.45)
Socio-economic Status	
Class I	87 (8.63)
Class II	219 (21.73)
Class III	266 (26.39)
Class VI	308 (30.56)
Class V	128 (12.7)
Family H/o Hypertension	
No	719 (71.33)
Yes	289 (28.67)

Table 2: Association of Hypertension with various variables

Variables	Hypertension Status			Chi-square Value	P value
	Total (n=1008)	Yes (n=160)(%)	No (n=848)(%)		
Age Group					
Early adolescent	401	62 (15.46)	339 (84.64)	1.423	0.491
Middle adolescent	420	63 (15)	357 (85)		
Late adolescent	187	35 (18.72)	152 (81.28)		
Sex					
Males	451	71 (15.74)	380 (84.26)	0.001	0.988
Females	557	89 (15.98)	468 (84.02)		
Religion					
Hindu	879	146 (16.61)	733 (83.39)	2.378	0.123
Muslim	129	14 (10.85)	115 (89.15)		
Cast					
General	265	54 (14.79)	311 (85.21)	10.176	0.022
OBC	284	36 (12.68)	248 (87.32)		
SC	260	57 (21.92)	203 (78.08)		
ST	99	13 (13.13)	86 (86.87)		
Type of Family					
Nuclear	768	121 (15.76)	647 (84.24)	0.007	0.935
Joint	240	39 (16.25)	201 (83.75)		
Family Size					
up to Four	220	38 (17.27)	182 (82.73)	2.441	0.295
4-8 Number	602	87 (14.45)	515 (85.55)		
Nine and Above	186	35 (18.82)	151 (81.18)		
Socio-economic Status					
Class I	87	18 (20.69)	69 (79.31)	5.363	0.252
Class II	219	35 (15.98)	184 (84.02)		
Class III	266	48 (18.05)	218 (81.95)		
Class VI	308	38 (12.34)	270 (87.66)		
Class V	128	21 (16.41)	107 (83.59)		
Family H/o Hypertension					
No	719	110 (15.3)	609 (84.7)	0.478	0.491
Yes	289	50 (17.3)	239 (82.7)		

In present study, the overall prevalence of hypertension was 15.87%, the overall mean systolic blood pressure (SBP) were 114.02 mm of Hg and overall mean diastolic pressure (DBP) were 74.08 mm of Hg.

In present study, hypertension in male and in female were 15.98% and 15.74% respectively without significant variation (P-value>0.05). Although maximum prevalence of hypertension was among age group of 17-19 years old (18.72 %) and in early adolescents and in mid adolescents it was nearly equal but this difference in distribution of hypertension with age was not found significant (P-value > 0.05). (Table 2)

The prevalence of hypertension among Hindu and among Muslims were 16.61% and 10.85% respectively; this difference was not found significant (P-value > 0.05). Prevalence of hypertension was high among SC category (21.92%) followed by General Category (14.79%), ST category (13.13%) and least among OBC category (12.68%). This difference of distribution of hypertension as per caste was found with significant variation (P-value = 0.022). (Table 2)

Prevalence of hypertension was almost equal among nuclear type of family (15.76%) and joint type of family (16.25%). Although occurrence of hypertension was high among class I high socio-economic status of families (20.69%) and least among class IV (12.34%) but on analysis distribution of hypertension as per socio-economic status of family was not found significant (P-value> 0.05). Although hypertension was found in 17.30% of students with positive family history of hypertension than in students without positive family history of hypertension (15.3%) but this distribution of hypertension as family of hypertension was not found significant (P-value> 0.05). (Table 2)

DISCUSSION

Blood pressure is a measure of the pressure or force of the blood against the walls of the blood vessels or arteries. Age, race, gender play a significant role in blood pressure level in case of children.

In present study, the prevalence of hypertension was 15.87% in school going adolescent children. Almost similar observation were made by study conducted by Nisha Singh et al¹² in Bhopal who

reported prevalence of hypertension among adolescents 15.3 %.

Many of the studies had reported lower prevalence of hypertension than the present study like by Nihaz K. Naha et al¹³ and Anita D. Patil et al¹⁴. Nihaz K. Naha et al¹³ conducted a study in Thrissur District, Kerala India, and reported prevalence of hypertension 4.5% in 5-10 yrs of age. Anita D. Patil et al¹⁴ among urban school children in Mumbai, prevalence of hypertension was found 5.4% in 9-15 yrs of age. Harini Gopala krishnan et al¹⁵ found prevalence of hypertension 11.4% in age group of 10-15 years children in Tiruchirapalli, Tamil Nadu, India. This lower prevalence of adolescent hypertension may be due to lower aged school going children included in these studies.

In present study, although the prevalence of hypertension was more in age group of 17-19 years (18.72 %) than its counterparts but no association of hypertension was found with age on further analysis. In contrast to that in a study conducted by Anand NK et al¹⁶ in Amritsar, it was observed that the blood pressure increased with increase in age with a spurt in systolic blood pressure at the age of 12 years in both the genders.

In present study, although slightly high prevalence in male children than the female children but there was no significant difference in distribution of hypertension as per sex (15.98% v/s 15.74%). Similar observations made by earlier studies conducted by Nirav Buchet al¹⁷ in Surat city, South Gujarat, India, Hypertension in males was 6.74% and in females was 6.13% without significant difference. Another study conducted by Nisha Singh et al¹² reported prevalence of hypertension 14.04% among boys and 17.3 % among girls which was also without significant difference.

In present study, although hypertension was found more in Hindu than in Muslims (16.61% v/s 10.85%) but it was without significant difference. In contrast to this Kaushik Nag et al¹⁸ who conducted their study in Agartala, Tripura, India, reported significantly more hypertension in Muslim than Hindus (17% v/s 5%).

In present study, hypertension was found significantly more in SC category (21.92%) which followed by General Category (14.79%), ST category (13.13%) and least in OBC category (12.68%). Distribution of Hypertension with caste was found with significant variation in other study¹⁸ also but there was higher prevalence of hypertension in General caste 8.4% whereas in SC it was 3.7%, and in OBC it was 3.3%.

In present study, although occurrence of hypertension was higher in class I status of families (20.69%) and least in class IV (12.34%) but this dis-

tribution of Hypertension was without significant variation. A study conducted by Kaushik Nag et al¹⁸ reported higher prevalence of hypertension upper socio-economic status 9.3%, in class IV was 5.7%, least in class II.

In present study, among children who had positive family history of hypertension 17.3% had hypertension and in 15.3% in students without positive family history of hypertension but this distribution of hypertension as family history of hypertension was also not found significant (P-value>0.05). In similar line a study conducted by Nirav Buch et al¹⁷ also observed no significant association between hypertension and family history of hypertension. In contrast to present study, a study conducted by Kaushik Nag et al¹⁸ observed significantly higher prevalence of hypertension among those students (8%) with positive family history than where family history of hypertension was absent (5.2%).

CONCLUSION

Hypertension was found in 15.87% of study population i.e. school going adolescent. The prevalence of hypertension was found to be associated with cast where it was found significantly higher in SC category. Other studied variable like age, sex, religion, socio economic status, family history of hypertension etc were not found to associated with prevalence of hypertension.

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