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Review Article

Increasing trend of high blood pressure in the adolescents from rural wardha

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ABSTRACT

Aim: To study the prevalence of Hypertension among the adolescent in rural population of PHC, Anji. Dist. Wardha, Maharashtra, INDIA **Methods:** A cross sectional study was carried out among the adolescents (10-19 years) of Anji P.H.C. Sample size studied was 405, selected by random sampling. The sampling frame available with department of Community Medicine. We collected the data on their socio-demographic variables and blood pressure of each adolescent was measured. **Results:** Out of 405 individuals studied 182(44.9%) were male and 223(55.1%) were female. Prevalence of high blood pressure levels was found 24.4%, i.e. >90th percentile for age, sex and height. The prevalence was higher (25.1%) in female against lower (23.6%) in male. Also Prevalence of high blood pressure levels was to be increase with age (i.e 25.2% in >15 year of age against (23.3%) in <15 year of age. **Conclusion:** These finding indicate that there is definitely alarming situation as per prevalence of high blood pressure levels even in rural communities. The early identification of cardio metabolic risk factors can help with an attempt to prevent or delay metabolic syndrome, diabetes and cardiovascular disease.

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1. Introduction

In children and adolescents the prevalence of hypertension appears to be increasing[1]. Obesity is one of reason for that. There is evidence that Once the hypertension set in childhood, this can lead to hypertension in adult [2]. The hypertension is the important components of metabolic syndrome. Therefore, the increasing prevalence of these components leads to metabolic syndrome. The relationship among blood pressure (BP), central obesity, and high levels of insulin observed in adults has also been detected in children and adolescents [4].

Urbanization and lifestyle changes, mainly contribute to the prevalence of cardio metabolic changes in rural areas.[5]. Because of less study in this regard from rural area, a very little information is available. Hence we have studied the prevalence high blood pressure along with prevalence of metabolic syndrome among rural adolescents in area of a Primary Health Centre.

Material & Methods

A cross sectional study was carried out in rural area of Primary Health Centre. All adolescent in the age group of 10-19 years of Primary Health Centre Anji, were included in study. The subjects who were not willing to participate in the study were excluded. The subjects were selected by using simple random sampling. The sampling frame available with department of Community Medicine was used for drawing the sample

The study was commenced after obtaining clearance from the Institutional Human Ethical Committee. The subjects were selected after obtaining written informed consent from them. Detailed history was taken including past and present status of health of parent, occupation, education, dietary intake and addiction of subjects etc. Using pre-designed proforma anthropometric measurement, were noted in the pretested proforma.

The subjects underwent anthropometric measurement, in where height and weight were measure by measuring tape and weight machine to the nearest 0.1cm and 0.1kg respectively. Waist circumference was measure by measuring tape in horizontal plane at the midpoint between the bottom of the rib cage and above the top of the iliac crest with person breathing silently and BMI was

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calculated by dividing weight(kg) by height squared (m^2). Blood pressure was recorded with sphygmomanometer in right arm, in sitting position, three times in subjects after giving rest for 10 minutes between each recording. The systolic and diastolic high blood pressure is defined by Blood pressure value >90th percentile for age sex and height. [6].

Statistical Analysis was conducted by using EPI-INFO & Health Watch Pro version 3.1 software. Chi square test was applied to test the significance of difference between two group and p value < 0.05 considered as significant.

Results

We have 24.4% prevalence of high blood pressure was found in our study subject.

Table I: Distribution of high blood pressure

High blood pressure (percentile)	Number of subjects	Prevalence
$\geq 90^{\text{th}}$	99	24.4
< 90 th	306	75.6
Total	405	100

[> 90th percentile for age sex and height is consider as high blood pressure]

Table II : Association of age with high blood pressure

Age group(in year)	Total(n)	HBP n(%)
<15	159	37(23.3)
≥ 15	246	62(25.2)
Total	405	99(24.4)
p- Value	--	≥ 0.05

[n=Number of subjects, HBP-High blood pressure]

The prevalence of high blood pressure was found to be 24.4%, It was highest (25.2%) in >15 year of age and lowest (23.3%) in <15 year of age.

Table III: Association of sex with high blood pressure

Age group (in year)	Total(n)	M.S n(%)	HBP n(%)
Male	182	14(7.7)	43(23.6)
Female	223	26(11.7)	56(25.1)
Total	405	40(9.9)	99(24.4)
p- Value	--	≥ 0.05	≥ 0.05

[[n=Number of subjects, M.S- Metabolic syndrome, HBP-High blood pressure]

The highest prevalence (25.1%) of high blood pressure in female against 23.6% in male.

Table IV: Association of family history of obesity with high blood pressure

The cardio metabolic risk factors found to be higher in the subjects with family history of obesity than the subjects with no history of obesity. The prevalence of high blood pressure was found to be higher (30.2%) in the subject with family history of obesity and lower (23.8%) in the subjects with no family history of obesity.

Family history of Obesity	Total(n)	HBP n(%)
Yes	43	13(30.2)
No	362	86(23.8)
Total	405	99(24.4)
p-Value	--	≥ 0.05

[n=Number of subjects, HBP-High blood pressure,]

Table V : Association of family history of hypertension with high blood pressure

The cardio metabolic risk factors found to be higher in the subject with family history of hypertension than the subject with no family history of hypertension. The prevalence of high blood pressure was found to be higher (29.2%) in the subject with family history of hypertension.

Family History of Hypertension	Total(n)	HBP n(%)
Yes	24	7(29.2)
No	381	92(24.1)
Total	405	99(24.4)
p-Value	--	≥0.05

[n=Number of subjects, HBP-High blood pressure,]

Discussion

Hypertension:

In the present study, we found overall prevalence of high blood pressure to be 24.4%. Another study from the same area found the prevalence of hypertension in rural area to be 5.8% [7]. Goel et al in their study on students aged 14–19 years in New Delhi found 6.4% of adolescents to be hypertensive [8].

In the present study, prevalence of high blood pressure was 25.1% in females as against 23.6% in males. However, the higher prevalence of high blood pressure among female was not significantly associated with high blood pressure ($p > 0.05$). Similarly, Ximena et al, found higher prevalence of hypertension in females (22.3%) as compared to males (18.9%) [9]. In the present study, prevalence of hypertension did not differ significantly with age ($p > 0.05$).

In contrast to several other studies, present study didn't significant association of family history of hypertension with adolescent high blood pressure. A population-based study of students aged 14–19 years in New Delhi found hypertension to be positively correlated with family history of hypertension.[8] Also, Soudarssanane et al found that the prevalence of hypertension was higher among subjects with positive family history of hypertension[10].

A higher prevalence in our study could be due to the difference in definition used, difference in study area and different composition of study population.

Conclusion

Thus, the present study reveals that increasing trend of High blood pressure is major health problem in rural area, indicating that cardio metabolic risk factors is not necessarily condition of urban area.

Therefore, we conclude that there is definitely alarming situation as per increase level of blood pressure are concerned, even in rural communities. The early identification of cardio metabolic risk factors can help with an attempt to prevent or delay metabolic

syndrome, diabetes and cardiovascular disease. The adolescent from affluent family, family history of obesity, hypertension and diabetes are at high risk, thus, need to modify their lifestyle to prevent non-communicable diseases, particularly heart disease, stroke and diabetes in future.

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