

**A COMPARATIVE STUDY OF BLOOD PRESSURE OF URBAN AND RURAL SCHOOL GOING BOYS OF PUNJAB****Vishaw Gaurav<sup>1</sup>, Mukhwinder Singh<sup>2\*</sup>, Pankaj Bhanot<sup>3</sup>, Sandeep<sup>4</sup> and Ved Parkash<sup>5</sup>**<sup>1</sup>Department of Education, Punjab, India.<sup>2</sup>Department of Physical Education, SSM College, Dinanagar, Punjab, India.<sup>3</sup>Department of Sports, Punjab, India.<sup>4</sup>Department of Physical Education, Guru Nanak Dev University, Amritsar, Punjab, India.<sup>5</sup>Department of Physical Education, SGGS Khalsa College Mahilpur, Punjab, India.**ABSTRACT**

*The purpose of this study was to compare the blood pressure between urban and rural school going boys of Punjab. A sample of fifty school going boys (Urban:  $N_1 = 50$ ; the mean age is  $14.9 \pm 0.84$  years; the mean height is  $149.21 \pm 1.01$  cm; the mean weight is  $47.91 \pm 2.03$  kg and mean BMI is  $21.42 \pm 0.99$ . and Rural:  $N_2 = 50$ ; the mean age is  $14.9 \pm 0.84$  years; the mean height is  $149.61 \pm 1.38$  cm; the mean weight is  $45.43 \pm 0.75$  kg and the mean BMI is  $20.25 \pm 0.51$ ) were selected from different schools of Punjab, India. Height measurements were taken by using the standard anthropometric rod to the nearest 0.5 cm. The subject's weight was measured with portable weighing machine to the*

*nearest 0.5 kg. Blood pressure measurements were made by using a standard mercury sphygmomanometer. The independent samples t-test was applied to assess the differences of blood pressure between urban and rural school going boys. Results indicated that urban boys had significantly more body weight ( $p < 0.05$ ), body mass index ( $p < 0.05$ ), systolic and diastolic blood pressure ( $p < 0.05$ ) values as compare to rural boys.*

**KEYWORDS:** Blood pressure, Urban, Rural, School, Boys.**INTRODUCTION**

Blood pressure is the pressure exerted by circulating blood upon the walls of blood vessels (Samavat et al., 2013). High blood pressure usually in adults is defined as 140-mmHg or higher than that systolic blood pressure or 90-mmHg or higher than that diastolic blood

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pressure (Nikpajoh, 2011). High blood pressure in childhood may be early expression of essential high blood pressure in adulthood (Nelson et al., 1992; Finta, 1993). High blood pressure is one of the leading causes of death in the world (Izadirad et al., 2013). High blood pressure is a major public health problem (Bouchard & Shephard, 1994). There are a billion people in the world suffering from high blood pressure and 4 million people die per year as a direct cause of high blood pressure (Samavat et al., 2013). The roots of essential hypertension in adults extend into childhood (WHO, 1985). Patients with hypertension are at high risk of stroke and cardiovascular disease up to 37% (Wilson et al., 1998). Data contained in the World Health Report (2002) showed that high blood pressure is a major contributing factor to all deaths in the world. The prevalence of high blood pressure was reported as 17% in Ahwaz City and as 7% in rural areas (Hojatzadeh & Naderi, 2000). Rural and urban areas living environments influence the level of physical activity (Sjolie & Thuen, 2002). Rural residence is commonly associated with a more dynamic, physically active lifestyle as compare to urban area. Some previous studies (Nielsen & Andersen, 2003; Al-Hazaa et al., 1994; Hagberg, 1990; Cooper et al., 1976; Montoye et al., 1972) suggested that more active subjects exhibited lower systolic and diastolic blood pressure and have a reduced risk of developing hypertension. Some studies (Steyn et al., 1993; Steyn et al., 1986; Seedat et al., 1982) indicated that the Indian population has the lowest incidence of hypertension (about 14%), while the urbanized Zulus have the highest incidence (25%). However, in rural Zulus, the incidence of hypertension is between 2% and 8% (Seedat et al., 1981), suggesting that urbanization may considerably increase the risk of hypertension. Therefore, the purpose of this study was to compare the blood pressure between urban and rural school going boys of Punjab.

## MATERIALS AND METHODS

**Subjects:** A sample of fifty school going boys (Urban:  $N_1 = 50$ ; the mean age is  $14.9 \pm 0.84$  years; the mean height is  $149.21 \pm 1.01$  cm; the mean weight is  $47.91 \pm 2.03$  kg and mean BMI is  $21.42 \pm 0.99$ . and Rural:  $N_2 = 50$ ; the mean age is  $14.9 \pm 0.84$  years; the mean height is  $149.61 \pm 1.38$  cm; the mean weight is  $45.43 \pm 0.75$  kg and the mean BMI is  $20.25 \pm 0.51$ ) were selected from different schools affiliated to Punjab School Education Board, Punjab, India. All the participants were informed about aim and methodology of the study and they volunteered to participate in this study. The purposive sampling method was used to select the subjects for the present study. The age of each subject was calculated from the date of birth as recorded in his school.

### Methodology

Height measurements were taken by using the standard anthropometric rod to the nearest 0.5 cm. The subject's weight was measured with portable weighing machine to the nearest 0.5 kg. BMI was calculated by the formula of;  $\text{Body Mass Index} = \text{Weight}/\text{Height}^2$ . Blood pressure measurements were made by using a standard mercury sphygmomanometer as per recommendations of the American Heart Association (Kirkendall et al., 1981).

### Statistical analyses

Values are presented as mean values and SD. Independent samples t tests were used to test if population means estimated by two independent samples differed significantly. Data was analyzed using SPSS Version 16.0.

## RESULTS

**Table-1: Physical Characteristics of Urban and Rural Boys.**

Variables	URBAN BOYS (N <sub>1</sub> =50)		RURAL BOYS (N <sub>2</sub> =50)		t-value
	Mean	SD	Mean	SD	
Age (yrs)	14.9	0.84	14.9	0.84	0.000
Height (cm)	149.21	1.01	149.61	1.38	1.654
Body weight (kg)	47.91	2.03	45.43	0.75	8.106*
BMI (kg/m <sup>2</sup> )	21.42	0.99	20.25	0.51	7.363*

\*Significant at 0.05 level

Table-1: depicts the physical characteristics of urban and rural boys. On analyzing the physical characteristics of the 50 urban boys, the mean age is  $14.9 \pm 0.84$  years; the mean height is  $149.21 \pm 1.01$ cm; the mean weight is  $47.91 \pm 2.03$  kg and mean BMI is  $21.42 \pm 0.99$ . On analyzing the physical characteristics of the 50 rural boys, the mean age is  $14.9 \pm 0.84$  years; the mean height is  $149.61 \pm 1.38$  cm; the mean weight is  $45.43 \pm 0.75$ kg and the mean BMI is  $20.25 \pm 0.51$ . Results indicated that urban boys had significantly more body weight and BMI values as compare to rural boys.

**Table 2: Comparison of Systolic Blood Pressure and Diastolic Blood Pressure between Urban and Rural Boys.**

Variables	URBAN BOYS (N <sub>1</sub> =50)		RURAL BOYS (N <sub>2</sub> =50)		t-value
	Mean	SD	Mean	SD	
Systolic Blood Pressure (mmHg)	111.08	1.78	107.93	2.02	8.272*
Diastolic Blood Pressure (mmHg)	69.35	1.00	66.96	1.88	7.940*

\*Significant at 0.05 level

Table-2: depicts the comparison of resting systolic blood pressure and diastolic blood pressure between urban and rural boys.

### **Systolic Blood Pressure**

In urban boys mean systolic blood pressure was  $111.08 \pm 1.78$  mmHg and  $107.93 \pm 2.02$  mmHg in rural boys. There was statistically significant decrease in systolic blood pressure in rural boys as compared to urban boys.

### **Diastolic Blood Pressure**

In urban boys mean diastolic blood pressure was  $69.35 \pm 1.00$  mmHg and  $66.96 \pm 1.88$  mmHg in rural boys. There was statistically significant decrease in diastolic blood pressure in rural boys as compared to urban boys.

## **DISCUSSION**

The purpose of this study was to compare the blood pressure between urban and rural school going boys. The physical characteristics of urban and rural school going boys showed that urban boys had significantly more body weight and BMI values as compare to rural boys. The findings of the present study indicated that there was statistically significant decrease in systolic and diastolic blood pressure in rural boys as compared to urban boys. Residents of rural areas report overall better health and health behavior practices compared with their urban counterparts (Iversen et al., 2005). Students living in rural area are commonly associated with a physically active lifestyle as compare to urban area. The studies (Cooper et al., 1976; Montoye et al., 1972) that suggested the more active and fit subjects, exhibited lower systolic and diastolic blood pressures. The prevalence of high blood pressure was reported as 17% in Ahwaz City and as 7% in rural areas (Hojatzadeh & Naderi, 2000). Some other studies also reported that rural children were fitter than their urban counterparts (Wikczewski et al., 1996; Mehtap & Nihal, 2005). The results of the present study are agreement with the study of Uppal and Sareen (2000), they find out the rural area students had better cardiovascular fitness as compared to urban area students.

## **CONCLUSIONS**

There were significant differences in body weight, body mass index, systolic and diastolic blood pressure between urban and rural boys. On average, urban boys had more weight, body mass index, systolic and diastolic blood pressure than rural boys.

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