

Blood Pressure Status of School Going Children

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Abstract:

Background: *Pediatric hypertension is known to cause long term cardiovascular morbidity and interferes with cognitive function.*

Objective: *The purpose of the study was to compare the range of blood pressure among the students of Bangladesh Sports Training Institute (BKSP) and the students of general school. Methodology:* *Cross sectional observational study design was used for this study &*

*convenience-sampling procedure was conducted. Samples were selected by purposive sampling procedure. Descriptive statistics were used to present data. Prior data collection verbal consent was taken and ethical approval was obtained from appropriate authority. Pre-tested semi structured questionnaire was used. **Result:** Among trainee school students, the mean systolic pressure found 100.70 ± 8.39 mm of Hg and the mean diastolic pressure found 60.60 ± 7.99 mm of Hg. The maximum and minimum systolic BP was 120 and 85 and diastolic BP was 80 and 50 mm of Hg respectively and among the non-trainee school students, the mean systolic pressure found 103.60 ± 10.645 mm of Hg and the mean diastolic pressure found 66.20 ± 7.99 mm of Hg. The maximum and minimum systolic BP was 130 and 80 and diastolic BP was 80 and 80 mm of Hg respectively. **Conclusion:** BP status was comparatively better among the students of trainee school than the students of non-trainee school. Therefore, non-trainee school students should take exercise regularly to keep their body fit and maintain their BP status.*

Key words: Blood Pressure Status, School Children

Introduction

Blood pressure indicate the force of blood flow on the blood vessels when heart pump. The rise of pressure is called high blood pressure or Hypertension. Generally it is consider that high blood pressure is diseases for adults. That's why, in most of the case high blood pressure/ hypertension become undiagnosed in children.

Hypertension is a chronic disease associated with high morbidity and mortality. Hypertension can lead to failure in vital organs, such as heart, brain, and kidney, and can cause death. It is estimated that 20 million people may die from cardiovascular diseases (CVDs) such as heart disease and

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stroke by 2015. [1] The burden of these diseases is on the rise in most developing nations including Bangladesh. [2] In adults, hypertension is a leading cause of morbidity worldwide. But it can also affect children. [3- 5] Pediatric hypertension is also known to cause long- term cardiovascular morbidity and interferes with cognitive function. [6- 10] Childhood overweight and obesity are known to increase the risk of cardiovascular morbidity, irrespective of whether obesity persists into adulthood. [11- 14] Studies from India, China, and Indonesia have reported the prevalence of childhood hypertension getting higher. [15- 22] A study from Sabah, Malaysia has reported that the prevalence of hypertension among children aged 8- 9 years old was 14%. [23] Epidemiological studies have linked childhood hypertension to various adiposity indicators. [8,18- 20,24].

Some studies have shown that obesity defined as body mass index (BMI) of ≥ 95 percentile based on gender and age does not correlate well with body fat distribution as compared with waist circumference (WC) which is more accurate in predicting abdominal mass, thus correlating better with hypertension in children. [24,34] However, studies have consistently reported that elevated blood pressure (BP), systolic blood pressure (SBP), and diastolic blood pressure (DBP) are significantly correlated with BMI. [15- 18- 20,22] Some studies have investigated the association of childhood hypertension with skin fold thickness, hip circumference, birth weight, dietary habits, and family history of hypertension. [15,18,20] The relationship of childhood hypertension with the total number of hours of sleep, physical activity, and dietary intake are seldom reported. [15]

Obesity in adults is a public health problem in Malaysia. [26] The prevalence ranges from 9% to 23% in urban areas. [10] However, no study has been published on childhood

hypertension in the Malaysian peninsula. A study from Sabah, Malaysia has reported that 50% of obese children also had hypertension. [23] However, this study did not report the association of BMI, WC with childhood hypertension or collect data on dietary intake and physical activity. We aimed to study the distribution of BP and its relationship with BMI, WC, dietary habits, physical activity, and duration of sleep in primary school children.

Methodology

Study design: It was an observational cross sectional study

Study area and population: The study was conducted in the Bangladesh Krira Sikkha Protisthan (BKSP) and Mograpara HGGs Smriti Biddayton.

Study sample and sampling method: Purposive sampling technique was followed to take sample in this study. Participants aged between 13 to 17 years were measured selected from exercise physiology department, BKSP, Savar, Dhaka. The general students aged between 13 to 17 years and the BP was measured selected from the school campus, Mograpara, Sonargaon, Narayangonj. The total number of students was 100.

Data collection tools and techniques: Before the measurement students were asked to take rest for minimum 15 minutes to get the blood pressure. Student's blood pressure is obtained by Auscultator method. By this procedure sample selection was easier and quicker. Data collection was one of the most crucial parts of research. Though there was several way of collecting data, it was easier and reliable by taking under responsibility of in-charge, the department of exercise

physiology. The data were collection in the department of ex-physiology in BKSP and Mogradpara HGGS Smriti Biddayton. For the trainee the samples were taken before their regular exercise at afternoon and for the general students the samples were taken at Tiffin period in school open day. Before the measurement, all the students take rest for 15 minutes to get their blood pressure. The inflatable cuff (5, 18 cm cuff) was wrapped around the arm that covers two-third of arm and a stethoscope was placed over brachial artery at the elbow. The cuff was rapidly inflated until the pressure in't' is well above the expected systolic pressure in the brachial artery. The artery was occluded by the Cuff and no sound was heard with the stethoscope. Then the pressure in the cuff was lowered slowly. At the point at which systolic pressure in the artery just exceed the cuff pressure, a spurt of blood pressure through with each heart beat and a tapping sound is heard in the brachial. The cuff pressure at which the sounds were first heard was the systolic pressure. As the cuff pressure was lowered further, in most individuals, they disappeared, the cuff pressure when the korotkoff sound changed to a muffled quality was approximately equal to the diastolic pressure.

Data analysis: Statistical analysis was done with statistical package program SPSS 16.5. Mean, standard deviations were calculated with SPSS 16.5 package program.

Ethical Issues: Study subjects were enrolled in the study after given informed written consent as well as their parents. The information given by the subjects were not disclosed without prior permission from the subject. All the subjects had given the right to withdraw his/her consent from the study at any time without giving any compensation during the study period. Scarcity of related literature was limitation of the present study.

Results

The table shows the distribution of the non-trainee school students by age and sex. Among the 50(100%) students, the majority 74% were boys and 26% were girls. The maximum numbers of students 15 were in 16 years age group and the minimum numbers of students 2 were in 12 years age group. The mean age of the students was 14.90 ± 1.35 years (Table 1). Study shows the distribution of the trainee school students by age and sex. Among the 50(100%) students, the majority 70% were boys and 30% were girls. The maximum numbers of students 17 were in 14 years age group and the minimum numbers of students 6 were in 13 and 17 years age group. The mean age of the students was 14.84 ± 1.21 years (Table 1). The table shows the descriptive statistics of BP among trainee school students. The mean systolic pressure found 100.70 ± 8.39 mm of Hg and the mean diastolic pressure found 60.60 ± 7.99 mm of Hg. The maximum and minimum systolic BP was 120 and 85 and diastolic BP was 80 and 50 mm of Hg respectively (Table 2). The above table shows the descriptive statistics of BP among non-trainee school students. The mean systolic pressure found 103.60 ± 10.645 mm of Hg and the mean diastolic pressure found 66.20 ± 7.99 mm of Hg. The maximum and minimum systolic BP was 130 and 80 and diastolic BP was 80 and 80 mm of Hg respectively (Table 3).

Discussion

The purpose of the study was to compare of the range of blood pressure among the students of BKSP and the students of general school. There were 50 several trainees students of BKSP and 50 non-trainees general students of a general school were participants in this study. Blood pressure of the players aged between 13 to 17 years were measured selected from

exercise physiology department, BKSP, Savar, Dhaka. The general students aged between 13 to 17 years and the BP were measured selected from the school campus, Mogradpara, Sonargaon, Narayanganj. The total number of students (100) was taken as a sample. Before the measurement students were asked to take rest for minimum 15 minutes to get the blood pressure. Student's blood pressure was obtained by Auscultator method. By this procedure sample, selection was easier and quicker. Among the 50(100%) students of non-trainee, the majority 74% were boys and 26% were girls. The maximum numbers of students 15 were in 16 years age group and the minimum numbers of students 2 were in 12 years age group. The mean age of the students was 14.90 ± 1.35 years. Among the 50(100%) students of trainee, the majority 70% were boys and 30% were girls. The maximum numbers of students 17 were in 14 years age group and the minimum numbers of students 6 were in 13 and 17 years age group. The mean age of the students was 14.84 ± 1.21 years. The descriptive statistics of BP among trainee school students found that the mean systolic pressure found 100.70 ± 8.39 mm of Hg and the mean diastolic pressure found 60.60 ± 7.99 mm of Hg. The maximum and minimum systolic BP was 120 and 85 and diastolic BP was 80 and 50 mm of Hg respectively. Of the non-trainee school students. The mean systolic pressure found 103.60 ± 10.645 mm of Hg and the mean diastolic pressure found 66.20 ± 7.99 mm of Hg. The maximum and minimum systolic BP was 130 and 80 and diastolic BP was 80 and 80 mm of Hg respectively.

Conclusion

BP status was comparatively better among the students of trainee school than the students of non-trainee school were. Therefore, non-trainee school students should take exercise regularly to keep their body fit and maintain their BP status.

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Table 1: Personal Information

Subjects of non -trainee school				trainee school (BKSP)			
Age in years	Sex of the students		Total	Age in years	Sex		Total
	Boy	Girl			Boy	Girl	
12	1 50.0%	1 50.0%	2 100.0%	12	0	0	0
13	6 85.7%	1 14.3%	7 100.0%	13	4 66.7%	2 33.3%	6 100.0%
14	7 70.0%	3 30.0%	10 100.0%	14	13 76.5%	4 23.5%	17 100.0%
15	7 63.6%	4 36.4%	11 100.0%	15	8 66.7%	4 33.3%	12 100.0%
16	12 80.0%	3 20.0%	15 100.0%	16	6 66.7%	3 33.3%	9 100.0%
17	4 80.0%	1 20.0%	5 100.0%	17	4 66.7%	2 33.3%	6 100.0%
Total	37 74.0%	13 26.0%	50 100.0%	Total	35 70.0%	15 30.0%	50 100.0%

Table 2: Distribution descriptive statistics of BP among trainee school students

Systolic pressure mm of Hg	Mean	100.70
	Standard Deviation	8.392
	Maximum	120
	Minimum	85
Diastolic Pressure mm of Hg	Mean	60.60
	Standard Deviation	7.995
	Maximum	80
	Minimum	50

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Table- 3: Distribution descriptive statistics of BP among non-trainee school students

Systolic pressure mm of Hg	Mean	103.60
	Standard Deviation	10.645
	Maximum	130
	Minimum	80
Diastolic Pressure mm of Hg	Mean	66.20
	Standard Deviation	7.995
	Maximum	80
	Minimum	80