

ORIGINAL ARTICLE

Blood Pressure and Other Cardiovascular Risk Factors Among Young Black Adults

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Background	High blood pressure is a leading cause of morbidity and mortality worldwide including Africa. The age of onset of this condition among young adult black urban dwellers is largely unknown. The economic burden occasioned by this condition calls for early detection to facilitate effective management. We determined the blood pressure and other cardiovascular risk factors among urban dwelling young adults at the school of medicine, University of Nairobi, Kenya.
Objective	To determine the blood pressure and other cardiovascular risk factors among urban dwelling young adults at the school of medicine, University of Nairobi, Kenya.
Methods	Three hundred and fifty one medical students were included in the study and grouped by level of study, physical activity and smoking status. The blood pressure, weight, height, hip and waist circumference were measured.
Results	The mean blood pressure, BMI and Waist hip ratio were 121/73 mmHg, 21.8 and 0.81 respectively. Seventy six students (26%) had a BMI below 20, while 28 students (9.6%) had a BMI greater than 25. A quarter of the students had prehypertension while 35(10%) students had stage I hypertension.
Conclusions	Almost half of the young black adults have early non-obesity related hypertension. Elevated blood pressure in the young adults should be controlled to prevent cardiovascular disease related death later in life.
Keywords	Hypertension, Young black adults. (Heart Mirror J 2011; 5(3): 378-380)

INTRODUCTION

Blood pressure is known to vary with individual characteristics like age, body mass index, Waist Hip ratio and ethnic background (1). Certain life style habits, including unhealthy dietary habits, cigarette smoking and inactivity have also been identified as risk factors for cardiovascular disease that in part may be mediated or modulated through effects on blood pressure and body weight (2). Elevated blood pressure, overweight and obesity have been positively correlated and identified as risk factors for cardiovascular disease (2). The development of these risk factors starts early in life and may be present already in childhood and adolescence (3-5).

Hypertension is defined as a sustained diastolic pressure greater than 90mm Hg or a sustained systolic pressure of more than 140mm Hg (6). In the developed world it affects 20-30% of the adult population. A higher prevalence has been reported in black Africans with up to 40-45% of adults being affected (7). Essential hypertension usually

begins between ages 35-45 years and worsens with age (8). Imminent danger of hypertension has however also been reported in a young population aged 20-26 years (9).

Medical school schedule demands hinder medical students from engaging in regular exercises. Such lack of exercise has been shown to correlate with high blood pressures among students (1). Medical students at the University of Nairobi are subjected to different amounts of work pressure. Whether this has an influence on the blood pressure and pulse rates to the best of our knowledge has not been determined. Blood pressure in youths has also been shown to be an indicator of the development of hypertension in the future (9). Data on blood pressure profiles among Kenyan youth is however unavailable. This study therefore aims at determining the blood pressures among medical students at a Kenyan university and the factors that influence it.

Abbreviations and Acronyms

BMI : Body Mass Index
 WHR : Waist Hip Ratio
 DBP : Diastolic Blood Pressure
 SBP : Systolic Blood Pressure

METHODS

Three hundred and fifty one volunteer students from school of medicine, university of Nairobi were included in this study. The approximate age ranges of the students are 19–26 years. They were given self-administered questionnaires to provide information on demographic, lifestyle and health characteristics. Systolic blood pressure (SBP) and Diastolic blood pressure (DBP) were measured to the nearest millimeter of mercury using an aneroid sphygmomanometer and a stethoscope (Litmann®) while the participants are seated (7). Measurements were taken by two independent observers and the average taken. The height was measured using a tape-measure and weight measured using a weighing scale (Weiss®).

Statistic

Data collected was analysed using Statistical Package for Social Sciences (SPSS) for windows version 17.0 Chicago Illinois 2008.

RESULTS

Three hundred and fifty one (170 males and 181 females) students medical students between year 1 and 5 were assessed. The mean age of the students was 21 yrs (Range 19 to 29 years). Sixteen students smoked while a fifth of the students did not participate in any physical exercises. The mean weight, height, BMI and waist hip ratio were 61kg, 167cm, 21 and 0.81 respectively (Table 1 and 2). The mean blood pressure was 121/72mm Hg (Figure 1).

Table 1: Gender versus cardiovascular risk profile:

Gender	WHR	Systolic BP	Diastolic BP	BMI
Male	0.82	124	73	21.8
Female	0.81	118	71	21.9

Table 2: Year of study versus cardiovascular parameters:

Year of study	SBP	DBP	WHR	BMI
1	121	69	0.81	21.7
2	120	73	0.81	21.9
3	120	75	0.80	22
4	122	76	0.96	22.3
5	121	72	0.85	21.7

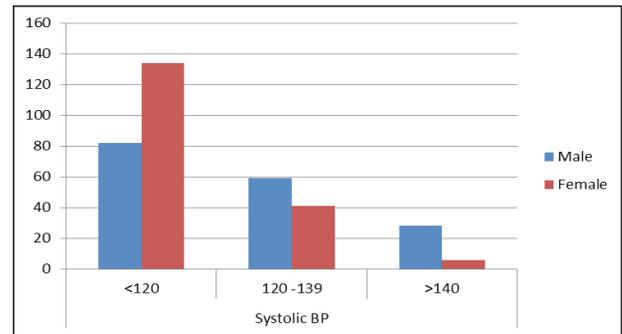


Figure 1: Blood pressure among medical students.

DISCUSSION

Hypertension is epidemic world-wide and is a rising cause of death in Africa (10). Observations from the current study support previous observations that age of onset of hypertension is 20 to 26 years and tracks through adulthood (9, 11, 12). Similar to the observations made by McCarron et al. in Caucasians and Bimenya in blacks, most hypertensive students had stage 1 hypertension (9, 12). These findings are also in concurrence with the observations in epidemiological studies which show a general rise of blood pressure in the black population with a relative left skewed blood pressure among caucasians (8, 9, 12).

Blood pressure in young adults is positively associated with mortality from cardiovascular disease in later life therefore management of blood pressure in this age group could reduce mortality from cardiovascular disease (12, 13). Different from the observations seen in the western populations, the increased systolic blood pressure in young blacks is isolated from worse of BMI, WHR, for age or gender (14-16).

Increased blood pressure in young black adults is worse due to the epidemiological transition in this group (17, 18). Although most of the young adults do not smoke or consume alcohol, they maintain a sedentary lifestyle and with high salt intake, hence developing non-obesity related hypertension. Independent of the urban life, the black African ethnic group is genetically predisposed to early hypertension (19). Therefore young adult black Africans should constantly be concerned about the possibility of developing early hypertension.

CONCLUSION

Hypertension in black Africans sets in during the second decade of life and is not related to obesity. Appropriate measures should be taken to control high blood pressure among the young adults to prevent cardiovascular disease related death later in life.

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REFERENCE

1. Angyan L. Is it reasonable to involve kinesiology in medical education? *Acta Physiol Hung* 1999; 86(3-4):199-203.
2. Appel LJ, Moore TJ, Obarzanek E, et al. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. *N Engl J Med* 1997; 336(16):1117-24.
3. Newman WP, 3rd, Freedman DS, Voors AW, et al. Relation of serum lipoprotein levels and systolic blood pressure to early atherosclerosis. The Bogalusa Heart Study. *N Engl J Med* 1986; 314(3):138-44.
4. Serdula MK, Ivery D, Coates RJ, et al. Do obese children become obese adults? A review of the literature. *Prev Med* 1993; 22(2): 167-77.
5. Bao W, Threefoot SA, Srinivasan SR, et al. Essential hypertension predicted by tracking of elevated blood pressure from childhood to adulthood: The Bogalusa Heart Study. *Am J Hypertens* 1995; 8(7):657-65.
6. Chobanian AV, Bakris GL, Black HR, et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure: The JNC 7 report. *JAMA* 2003; 289(19):2560-72.
7. Kumar V, Cotran RS, Robbins SL. *Basic pathology*. 6th ed.: W.B. Saunders Co.; 1997.
8. Lindop GBN. Hypertension. In: McGee JOD, editor. *Oxford textbook of pathology*: Oxford University Press; 1992. p. 833-41.
9. Bimenya GS, Byarugaba W, Kalungi S, et al. Blood pressure profiles among Makerere University undergraduate students. *Afr Health Sci* 2005; 5(2):99-106.
10. Ogeng'o JA, Gatonga P, Olabu BO. Cardiovascular causes of death in an east African country: An autopsy study. *Cardiol J* 2011; 18(1):67-72.
11. Nelson MJ, Ragland DR, Syme SL. Longitudinal prediction of adult blood pressure from juvenile blood pressure levels. *Am J Epidemiol* 1992; 136(6):633-45.
12. McCarron P, Okasha M, McEwen J, et al. Changes in blood pressure among students attending Glasgow University between 1948 and 1968: Analyses of cross sectional surveys. *BMJ* 2001; 322(7291):885-9.
13. McCarron P, Smith GD, Okasha M, et al. Blood pressure in young adulthood and mortality from cardiovascular disease. *Lancet* 2000; 355(9213):1430-1.
14. Berkey CS, Gardner J, Colditz GA. Blood pressure in adolescence and early adulthood related to obesity and birth size. *Obes Res* 1998; 6(3):187-95.
15. Sorof J, Daniels S. Obesity hypertension in children: A problem of epidemic proportions. *Hypertension* 2002; 40(4):441-7.
16. Sangi H, Mueller WH, Harrist RB, et al. Is body fat distribution associated with cardiovascular risk factors in childhood? *Ann Hum Biol* 1992; 19(6):559-78.
17. Aubert L, Bovet P, Gervasoni JP, et al. Knowledge, attitudes and practices on hypertension in a country in epidemiological transition. *Hypertension* 1998; 31(5):1136-45.
18. Cappuccio FP. Commentary: Epidemiological transition, migration and cardiovascular disease. *Int J Epidemiol* 2004; 33(2):387-8.
19. Watson B, Jr, Bergman SM, Myracle A, et al. Genetic association of 11 beta-hydroxysteroid dehydrogenase type 2 (HSD11B2) flanking microsatellites with essential hypertension in blacks. *Hypertension* 1996; 28(3):478-82.