ORIGINAL ARTICLE

YIELD OF SCREENING FOR BLOOD PRESSURE OF EMPLOYEES IN A MEDICAL UNIVERSITY AT KARACHI

Zulfiqar Ali Shaikh, Fahmida Khatoon, Kelash Nankani, Darshan Kumar

Department of Community Medicine, Biochemistry, Physiology & Medicine, Dow International Medical College, and National Institute of Diabetes & Endocrinology, Karachi, Pakistan

ABSTRACT

Background: High blood pressure is an under-diagnosed condition and it damages the body with no or only mild symptoms. In Pakistan 19% people of age 15 or above suffer from high blood pressure. The objective of this study was to determine the frequency of high blood pressure among apparently healthy population

Methodology: It was a cross-sectional study, conducted from May 2009 to September 2009, at Dow University of Health Sciences, Ojha Campus, Karachi. With convenient sampling technique, the total study population was 124 with male to female ratio of 1.2:1. The employees of the University, both faculty and supporting staff, who were not known cases of high blood pressure, and who consented to participate, were included in the study.

Results: The hypertensives found were 11(9%) and 8(6.5%) were in the pre-hypertension category. There was no difference of normal BP among faculty and supporting staff (84.8% and 84.2% respectively). Four (3.2%) study subjects were going for regular walk, and they were normotensive. The smokers were 15(12%), and all the 5 smokers among 15 of more than 10 years' duration were having high BP.

Conclusion: A substantial number of study population did not have idea of having high BP, a vast majority was having sedentary life-style. There is need to promote awareness regarding hypertension and its risk factors and a healthy lifestyle.

KEY WORDS: Screening, Blood pressure, Hypertension, Medical University.

INTRODUCTION

High blood pressure (BP) is a common cardiovascular disorder. It is classified as essential (primary) or secondary. About 90-95% of hypertension is essential hypertension[1] and even though there are no direct causes, there are many risk factors such as sedentary lifestyle, obesity, salt (sodium) sesitivity, alcohol intake, and vitamin D deficiency.[2] It is also related to aging and to some inherited genetic mutations. Secondary hypertension is due to other conditions, such as kidney disease or tumours like adrenal adenoma or pheochromocytoma.[3]

Hypertension is the second most common cause of kidney failure after diabetes, a risk factor for coronary artery disease, stroke, congestive heart failure, myocardial infarction, vision loss and premature death. Hypertension is an under-diagnosed condition because it causes damage to the body with no symptoms or only mild symptoms. Many people are not aware that they have high BP, until it is accidentally found at a doctor visit or they develop complications of hypertension. It has been called a "silent killer" for this reason.[4]

It is estimated that nearly one billion people are affected by hypertension worldwide, and this figure is predicted to increase to 1.56 billion by 2025. The prevalence of hypertension is set to increase by 24% in developed countries and by 80% in developing countries.[5]

In the United States 50 million people (18.38%) have hypertension, only 34% of these have their BP controlled to a level of <140/90 mmHg. In 2002 hypertension cost the United States $47.2 billion dollars.[6]

More than 50% of the hypertensive population worldwide is unaware of their condition. In Pakistan, 19% people of age 15 or above (33% above the age of 45) suffer from hypertension.[7]

The magnitude of the burden of HBP needs not only an increase in awareness, treatment, and

control of this condition, but also concerted efforts that target primary prevention. Changes in lifestyle of the general population, would result in a lower prevalence of high BP. For the management of hypertension, non-pharmacological options should be explored in all patients who are hypertensive or pre-hypertensive. These measures include weight reduction and regular exercise, reducing sodium (salt) in the diet, the DASH diet (dietary approaches to stop hypertension), which is rich in fruits and vegetables and low-fat or fat-free dairy foods, discontinuing tobacco use and alcohol consumption and reducing stress, for example with relaxation therapy.[8]

The objective of this study was to check for prevalence of high BP among the faculty and staff members of the medical university.

MATERIAL AND METHODS

This study was a cross-sectional survey conducted at Dow University of Health Sciences, Ojha Campus, Karachi. The study participants included both male and female faculty and supporting staff of the university.

The information was collected by filling a pre-tested standardized proforma. The employees of the university who were not known cases of high BP and who consented to participate were included in the study. Convenient method of sampling was used and an informed consent was taken.

The data was collected during the period from 03-05-2009 to 03-09-2009.

Measurement of blood pressure (BP) was carried out on each participant by using the standard technique. Standardized mercury sphygmomanometers compatible with guidelines given in JAMA,[9] with appropriate cuff sizes on the basis of arm circumferences of the participants, and stethoscope were used.

Before BP measurement, it was made sure that the subject had not consumed either tea or coffee, smoked or exercised vigorously in the last 30 min. BP was measured in the sitting upright position in a chair with both feet flat on the floor for a minimum of five minutes, on the upper arm with the arm supported, and sphygmomanometer at the level of the heart.

The cuff was inflated above anticipated systolic pressure, and then slowly released the air while palpating the radial pulse. The cuff was re-inflated to 20-30 mmHg higher than the pressure at which the radial pulse was no longer palpable. A stethoscope was placed lightly over the brachial artery. The cuff was deflated at a rate of about 2-3 mmHg /s. Systolic pressure was taken as the reading at the onset of the sounds described by Korotkoff (Phase one). Diastolic pressure was then recorded as the pressure at which the sounds disappeared (K5).

Initially, BP was measured on both arms. If there was a difference in the readings obtained from the two arms, then only the arm with higher BP was used for the second measurement. The average values of two consecutive BP readings were taken. Three separate measurements at least one week apart were taken to label the blood pressure status.

The following classification of blood pressure was used to categorize the study subjects into various groups.

Classification of Blood Pressure (in mmHg) for Adults[10,11]

Category	Systolic	Diastolic
Hypotension	< 90	< 60
Normal	**90 – 119**	**60 – 79**
Pre-hypertension	120 – 139	80 – 89
Stage 1 Hypertension	140 – 159	90 – 99
Stage 2 Hypertension	> 160	> 100

The results were analyzed by using SPSS version 16.00.

RESULTS

Total number of study participants was 124 from Dow International Medical College, Nursing Institute, College of Pharmacy, National Institute of Diabetes and Endocrinology, Dow Diagnostic & Research Laboratories at Ojha Campus of Dow University of Health Sciences, Karachi. The socio-demographic features of study subjects are shown in Table 1.

The age of the study subjects varied from 22 to 66 years with mean, median, mode and standard deviation of 34.70, 33.50, 30 and 7.23 respectively. Four (3.2%) of them were suffering from diabetes mellitus with controlled blood sugar level without any complication.

The results of systolic and diastolic blood pressure measurement at three different times is shown in Table 2.

The work status (faculty or supporting staff) and number of children having to these study participants had no effect on normalcy of blood pressure; while older age showed a positive tendency as 90% of the people up to 40 years of age and

Table 1: Socio-demographic features of study subjects. (% shown in brackets)

Gender	Male			Female		
	69 (55.6)			55 (44.4)		
Marital Status	Married		Single		Divorced / Separated	
	92 (74.2)		31 (25.0)		1 (0.8)	
No. of Children	No Child	1	2	3	4	5
	52 (41.9)	16 (12.9)	27 (21.8)	24 (19.4)	4 (3.2)	1 (0.8)
Working as	Faculty			Supporting Staff		
	105 (84.7)			19 (15.3)		
Work Experience	Up to 1 Year	1-5 Years	6-10 Years	11-20 Years	More than 20 Years	
	18 (14.5)	47 (37.9)	34 (27.4)	19 (15.3)	6 (4.8)	
Smoking Status	Smokers			Non-Smokers		
	15 (12.1)			109 (87.9)		
Pan / Chalia	Users			Non-Users		
	1 (0.8)			123 (99.2)		
Tobacco / Naswar /Drugs	Users			Non-Users		
	0 (0)			124 (100)		

Table 2: Descriptive statistics of Blood Pressure measured at three different times.

	Minimum	Maximum	Mean	Standard Deviation
Blood Pressure Systolic – 1st Reading	100	160	118.39	10.591
Blood Pressure Diastolic – 1st Reading	60	110	78.03	8.346
Blood Pressure Systolic – 2nd Reading	100	160	118.11	10.212
Blood Pressure Diastolic – 2nd Reading	60	106	74.24	8.583
Blood Pressure Systolic – 3rd reading	100	160	117.90	10.079
Blood Pressure Diastolic – 3rd reading	60	106	74.15	9.157

72% of more than 40 years, were normal. All the 5 cigarette smokers (out of total 15) of more than 10 years duration were having HBP.

The systolic BP compared with sex and nature of work of study subjects is shown in Table 3.

Four of the study subjects (all faculty members) go for regular walk, and they were normotensive. One staff member consumed pan/chalia and he had normal BP.

The frequency of all the four conditions of systolic and diastolic BP of first, second and third measurements i.e. normal pressure, pre-hypertension, stage I and stage II hypertension is shown in Figure

DISCUSSION

The study subjects represented both faculty and supporting staff from medical university, with a male to female ratio of 1.2:1. It is astonishing to find a 9% of the study population as hypertensive and 6.5% in a pre-hypertension category, which did not know about their BP status and were found only by the screening. If the people are aware of

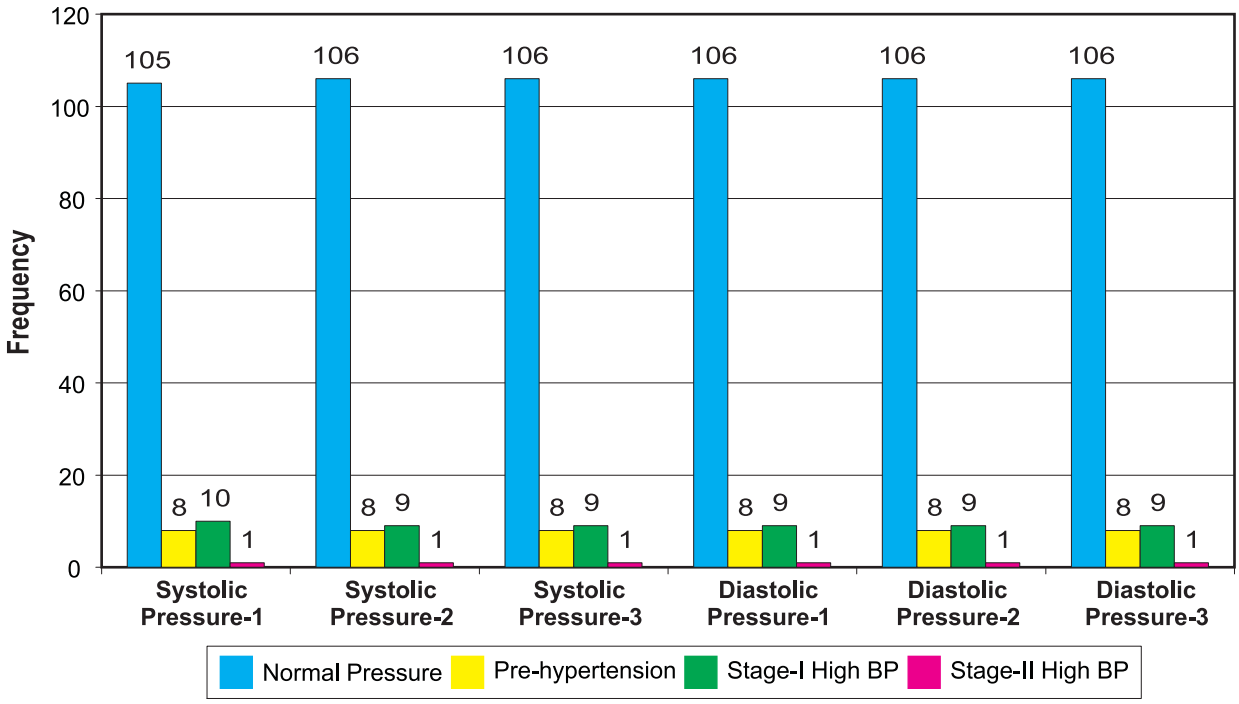

Fig. 1: Normal pressure, pre-hypertension, stage I and stage II hypertension of three readings of systolic and diastolic pressure.

Table 3: Systolic Blood Pressure compared with sex and nature of work of study subjects.

Working as			Systolic Blood Pressure				Total
			Normal Pressure	Pre-Hyper-tension	Stage-I Hyper-tension	Stage-II Hyper-tension	
Faculty	**Sex**	Male	45 77.6%	7 12.1%	5 8.6%	1 1.7%	58 100.0%
		Female	44 93.6%	1 2.1%	2 4.3%	0 .0%	47 100.0%
	Total		89 84.8%	8 7.6%	7 6.7%	1 1.0%	105 100.0%
Supporting Staff	Sex	Male	9 81.8%	0 .0%	2 18.2%	0 .0%	11 100.0%
		Female	7 87.5%	0 .0%	1 12.5%	0 .0%	8 100.0%
	Total		16 84.2%	0 .0%	3 15.8%	0 .0%	19 100.0%
	Grand Total		105 84.7%	8 6.5%	10 8.1%	1 0.8%	124 100%

having HBP, the medical and human costs of treating preventable conditions such as stroke, heart failure, and end-stage renal disease can be reduced by antihypertensive treatment. The recurrent and chronic morbidities associated with hypertension are costly to treat. Pharmacotherapy for hypertension therefore offers a substantial potential for cost savings.[12] According to National health survey of Pakistan only less than three per cent of the hypertensive had their BP controlled to the con-

ventional recommendations of under 140/90 mmHg.[7] As per report more than 50% of the patients do not have a clear concept about the treatment of HBP and they were found to believe that a long term treatment is not required leading to high prevalence rate of the disease.[13] The prevalent situation of hypertension in the future may pose a severe burden on the under resourced health care system in Pakistan.

All the six readings (three each of systolic and diastolic pressure at three different times) are almost same, suggesting the reliability and accuracy of BP measurements.

There was no difference of normal BP among faculty and supporting staff (84.8% and 84.2% respectively), but more females in the first group (93.6%) were having normal pressure as compared to the later group (87.5%). This suggests that both the groups were equally careful / careless, and females were comparatively less sufferers of HBP. In another study the overall prevalence of hypertension in a low income settlement of Karachi was found 26%, the prevalence among males (34%) was higher than females (24%); and the prevalence of hypertension increased with age.[14]

All the cigarette smokers of more than 10 years' duration were having HBP; and those who were of relatively older age groups were found more in the category of hypertension. This establishes the already known facts about blood pressure.[3]

Surprisingly, only four of the study subjects (3.2%) were in the habit of regular walk, and the rest (96.8%) did not spare time for their health. This shows the overall life style of the population. The sedentary lifestyle,[2] is one of the risk factors for HBP. This is so important that the lifestyle advice and non-pharmacological options are offered to the patient, before any initiation of drug therapy.[15]

CONCLUSION

A substantial number of the study population did not have idea of their BP, and a vast majority was having sedentary life style.

This highlights the need to promote awareness regarding hypertension through print and electronic media. People should be advised to get their blood pressure checked to counter the morbidity and mortality caused by hypertension.

REFERENCES

1. Oparil S, Zaman MA, Calhoun DA. Pathogenesis of hypertension. Ann Intern Med 2003; 139: 761-76.
2. Kyrou I, Chrousos GP, Tsigos C. Stress, Visceral Obesity, and Metabolic Complications. Ann N Y Acad Sci 2006; 1083: 77-110.
3. Kosugi T, Nakagawa T, Kamath D, Johnson RJ. Uric acid and hypertension: an age-related relationship? J Hum Hypertens 2009; 23: 75–6.
4. Pierdomenico SD, Di Nicola M, Esposito AL. Prognostic Value of Different Indices of Blood Pressure Variability in Hypertensive Patients. Am J Hypertens 2009; 48: 586-94.
5. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global Burden of Hypertension: Analysis of Worldwide Data. Lancet 2005; 365: 217-23.
6. What is Hypertension? http://www.wrongdiagnosis.com/h/hypertension/basics.htm. Retrieved on 12-06-2009.
7. Jafar TH, Rahbar MH, Khan AQ, Hattersley A, Schmid CH, Chaturvedi N. Ethnic subgroup differences in hypertension in Pakistan. J Hypert 2003; 21: 905-12.
8. Elley CR, Arroll B. Review: Aerobic exercise reduces systolic and diastolic blood pressure in adults. ACP J Club 2002; 137: 109.
9. Reeves R. The rational clinical examination. Does this patient have hypertension? How to measure blood pressure. JAMA 1995; 273: 1211–8.
10. Chobanian AV, Bakris GL, Black HR. Seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure. Hypertension 2003; 42: 1206–52.
11. Diseases and Conditions Index - Hypotension. National Heart Lung and Blood Institute. September 2008. http://www.nhlbi.nih.gov/health/dci/Diseases/hyp/hyp_whatis.html. Retrieved 16-08-2009.
12. William J, Elliott T. The Economic Impact of Hypertension. J Clin Hypertens 2003; 5: 3-13
13. Abhijay Patel. Hypertension rise at mid-age. Pakistan Daily, Aug 15, 2009.
14. Safdar S, Omair A, Faisal U, Hasan H. Prevalence of hypertension in a low income settlement of Karachi, Pakistan. J Pak Med Assoc 2004; 54: 24-8.
15. http://en.wikipedia.org/wiki/Pharmacology Retrieved 16-08-2009

Corresponding author:

Dr. Zulfiqar Ali Shaikh
Head Department of Community Medicine
Dow International Medical College/
Dow University of Health Sciences
Ojha Campus, SUPARCO Road
Karachi, Pakistan
E-mail: drzulfiqarshaikh@gmail.com