IJABR

International Journal of Advanced Biotechnology and Research (IJABR)
ISSN 0976-2612, Online ISSN 2278–599X,
Vol-9, Issue-4, 2018, pp627-631
http://www.bipublication.com

Research Article

Analysis of prevalence of hypertension and high blood pressure among local population of Pakistan

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[Received: 18/11/2018; Accepted: 27/12/2018; Published: 30/12/2018]

ABSTRACT

Introduction: Hypertension has been recognized as a global health concern for developing countries and is scarcely described in many of these countries. In Pakistan, few population-based surveys evaluated the prevalence of hypertension and there is no current nationally representative study.**Aims and objectives:** The basic aim of the study is to analyze the prevalence of hypertension and high blood pressure among local population of Pakistan.**Methodology of the study:** This study was carried out Pathology Department Hayathabad medical complex, Peshawar during Dec 2017 to April 2018. The sample size for the present study was calculated by taking most probable prevalence of hypertension as 50% and permissible error as 5% with 95% confidence interval. Fixing the permissible error as 50%, the minimum sample size was calculated as n = 100.**Results:** Regarding the self or family history of any chronic disease; 50 (10.3%), and 16 (3.3%) of the total study participants were known hypertensive, and diabetes mellitus (DM) patients respectively, while 82 (16.8%) and 64 (13.1%) have family history of hypertension and DM respectively.There are number of factors which influence on blood pressure levels. Age, cholesterol, BMI and diet are the main factors which directly effect on blood pressure levels.**Conclusion:** It is concluded that increasing age is proved to be an independent risk factor for hypertension.

Keywords: hypertension and high blood pressure,

INTRODUCTION

Hypertension has been recognized as a global health concern for developing countries and is scarcely described in many of these countries. In Pakistan, few population-based surveys evaluated the prevalence of hypertension and there is no current nationally representative study. Elevated BP is positively correlated to the risk of stroke and coronary heart disease. Other than coronary heart disease and stroke, its complications include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage, and visual impairment[1].

Hypertension (or HTN) or high blood pressure is defined as abnormally high arterial blood pressure. According to the Joint National Committee 7 (JNC7), normal blood pressure is a systolic BP < 120 mmHg and diastolic BP < 80 mm Hg[2]. Hypertension is defined as systolic BP level of ≥140 mmHg and/or diastolic BP level ≥ 90 mmHg. The grey area falling between 120–139 mmHg systolic BP and 80–89 mmHg diastolic BP is defined as "prehypertension". Although prehypertension is

not a medical condition in itself, prehypertensive subjects are at more risk of developing HTN[3].

Sleep blood pressure (BP) is a powerful predictor of cardiovascular complications, and there is suggestive evidence that controlling BP during sleep has beneficial outcomes. When drugs are given in the morning, the drug concentration may be lowest at the time when good BP control is desirable[4]. This has led to the idea that it may be preferable to give medication in the evening. Much epidemiologic, experimental, and clinical data confirm the relevance of nutritional factors in determining blood pressure (BP) in the population as a whole, and among subjects with hypertension[5]. Factors epidemiologically related to BP such as weight, caloric intake, and the minerals sodium, potassium, calcium, and magnesium also have been the focus of therapeutic intervention trials. These trials have shown that lowering dietary calorie, alcohol, or salt content, and providing increased amounts of calcium, potassium, or magnesium may each lower BP in at least some "sensitive" subjects[6].

Background of the study

Hypertension is a noteworthy hazard factor for various genuine health conditions, including cardiovascular ailment, cerebrovascular malady, and constant kidney illness[3]. Worldwide, 9.4 million passing are credited to difficulties from hypertension, including 45% of all passing because of coronary vein illness and 51% of all passing because of stroke[4]. These relations are steady in the two people, in youthful, moderately aged, and more seasoned subjects, among different racial and ethnic gatherings, and inside and between nations.

In spite of the fact that there is a continuum of cardiovascular hazard crosswise over levels of circulatory strain, the characterization of grown-ups as indicated by pulse gives a system to differentiating levels of hazard related with different circulatory strain classes and for characterizing treatment edges and helpful objectives[7].

Aims and objectives

The basic aim of the study is to analyze the prevalence of hypertension and high blood pressure among local population of Pakistan.

Methodology of the study

This study was carried out Pathology Department Hayathabad medical complex, Peshawarduring Dec 2017 to April 2018. The sample size for the present study was calculated by taking most probable prevalence of hypertension as 50% and permissible error as 5% with 95% confidence interval. Fixing the permissible error as 50%, the minimum sample size was calculated as $n = 100$.

Data collection

The data was collected from 100 patients which was suffering from high blood pressure and any kind of heart issue. We find the Initial and fall in SBP (mmHg) during day and night on the different therapies. We collect some demographic information regarding age, sex, socio-economic status and history of blood pressure. Then in second part we collect data regarding high blood pressure and heart issues. For this purpose we prepare a questionnaire and fill that from patients.

Statistical analysis

Student's t-test was performed to evaluate the data. The relations of BP to other variables were analyzed by linear regression and Pearson correlation coefficients. Multiple regression analysis studied the interdependence of these relations among variables found to correlate significantly with BP. Data are expressed as the mean ± SD.

Ethical consideration

This research project was approved by "Departmental Ethics and Research committee" of the hospital. The purpose of the study was explained to the study participants accordingly.

RESULTS

Regarding the self or family history of any chronic disease; 50 (10.3%), and 16 (3.3%) of the total study participants were known hypertensive, and diabetes mellitus (DM) patients respectively, while 82 (16.8%) and 64 (13.1%) have family history of hypertension and DM respectively.

Table 01: Mean systolic and diastolic blood pressure (mm□hg) and prevalence (%) of isolated systolic hypertensive and isolated diastolic hypertensive by age and gender.

Age groups (years)	N	Systolic BP (mean ± SD)			Diastolic BP (mean ± SD)		
		Male	Female	Total	Male	Female	Total
25–34	204	122.17 ± 9.54	114.81 ± 9.99	117.84 ± 10.44	82.92 ± 9.0	78.97 ± 7.46	80.59 ± 8.34
35–44	179	124.10 ± 10.77	121.71 ± 15.13	122.90 ± 13.07	85.70 ± 7.66	81.71 ± 9.30	83.75 ± 8.68
45–54	133	132.36 ± 13.21	127.16 ± 18.04	129.66 ± 16.05	89.23 ± 8.16	83.28 ± 10.22	86.14 ± 9.72
55–64	124	134.66 ± 19.53	127.27 ± 15.74	130.97 ± 18.05	86.42 ± 12.15	83.24 ± 9.32	84.83 ± 10.90
Total	640	127.49 ± 14.19	121.39 ± 15.26	124.25 ± 15.05	85.82 ± 9.43	81.34 ± 9.05	83.45 ± 9.49
Test of significance	□	F = 15.396	F = 15.611	F = 30.466	F = 5.801	F = 4.921	F = 11.174
		df = 3	df = 3	df = 3	df = 3	df = 3	df = 3
		p = 0.001	p = 0.001	p = 0.001	p = 0.001	p = 0.002	p = 0.001

There are number of factors which influence on blood pressure levels. Age, cholesterol, BMI and diet are the main factors which directly effect on blood pressure levels. Table 02 shows the values of control group and diseased group which was suffering from the low and high blood pressure problems.

Table 02: Statistical analysis values of Control group and diseased group

Variable	Diseases Group	Control Group	t Value	*p* Value
Age（Year）	56.56±8.46	53.64±8.36	1.716	0.081
BMI（kg/m2）	24.31±2.26	23.37±2.09	2.195	0.031
SBP（mmHg）	140.36±15.70	116.53±13.46	8.248	0.000
DBP（mmHg）	87.94±10.69	75.81±9.94	5.967	0.000
PP（mmHg）	52.42±12.87	40.72±8.74	5.426	0.000
FBG（mmol/）	5.12±0.65	5.06±0.49	1.764	0.081
TG（mmol/L）	1.74±0.75	1.69±0.86	1.838	0.071
TC（mmol/L）	4.95±0.76	4.88±0.82	1.712	0.090
HDL-	1.30±0.43	1.31±0.56	1.717	0.089
LDL-C	3.46±0.58	3.38±0.66	1.139	0.266

DISCUSSION

Hypertension is an important public health problem in both the economically developed and developing world. In this comprehensive systemic review, we described estimates of the prevalence of hypertension in the adult Pakistani population. At present, there is lack of nationwide data regarding hypertension prevalence[7]. Domestic and international literature searches found only one recent review, which focused on hypertension in Asian countries.

Therefore, the present meta-analysis is relevant to the current healthcare need and based on a large number of participants. This meta-analysis provided a reliable estimate of the prevalence of hypertension in the Pakistani population[8]. Our results present a detailed view of the overall prevalence and burden of hypertension by gender, geographical region and estimate of hypertension prevalence with time, comparison of the overall prevalence of hypertension published in local and international journals and by study size[9].

Certain issues arising from previous nutritional interventions in hypertension form the basis of the present study[9]. First, the physiological basis underlying effects of diet on BP trials have included remains uncertain, as most previous intervention le biochemical data. Second, with few exceptions, these studies have tested the efficacy of altering single dietary components, with little assessment of the benefit of overall diets meeting current nutrient recommendations[10]. Third, current diet policies have achieved only limited success, perhaps as a result of the lifestyle changes involved in their implementation. We have begun to address these issues by analyzing the BP, weight, biochemical, and hormonal responses to two food plans conforming to current guidelines of the American Heart Association and the National Academy of Sciences, and administered to un medicated normotensive and hypertensive subjects with and without concomitant hyperlipidemia as part of a multicenter, randomized, controlled clinical trials[11].

Similar findings were reported by few other studies also where advancing age was positively related to hypertension. With increasing age, the aorta and arteries walls will be stiffened and this contributes to the high prevalence of hypertension in older age groups. In the present study, marital status, education, occupation, socioeconomic status, BMI, abdominal obesity, tobacco use, alcohol use, and physical activity were significantly associated with the hypertension[12].

CONCLUSION

It is concluded that increasing age is proved to be an independent risk factor for hypertension. Moreover, a considerable increase was found in the prevalence of hypertension over time and further, we stress over the need for good quality studies focusing on hypertension and its treatment in Pakistanis for hypertension management.

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