



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1478718>Available online at: <http://www.iajps.com>

Research Article

**ANALYSIS OF DIFFERENT RISK FACTORS OF  
HYPERTENSION AMONG ADULTS**<sup>1</sup>Dr. Muhammad Zulfiqar Abbasi, <sup>1</sup>Dr. Muhammad Khalil, <sup>2</sup>Dr. Nazish Fareed<sup>1</sup>Quaid-e-azam International Hospital, Islamabad<sup>2</sup>Aziz Hospital Khuiratta, Azad & Jammu Kashmir<sup>3</sup>DHQ Hospital, Palandri, Azad & Jammu Kashmir**Abstract:**

**Introduction:** Hypertension is a major public health problem due to its high prevalence all around the globe. Around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure. **Objectives of the study:** The basic aim of the study is to find the different risk factors of hypertension among adults. **Methodology of the study:** This study was carried out in Quaid-e-azam International Hospital, Islamabad during Dec 2017 to April 2018. Individuals aged 25–64 years in the selected study area who gave consent for participation were considered. Participants were interviewed by trained interviewers using the WHO STEPS-structured questionnaire. **Results:** The mean and median ages of the study participants were 35 and 32 years old respectively. 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. On the other hand, 182 (37.4%) and 131 (26.9%) of the total respondents were Chat chewer and smoker respectively. **Conclusion:** It is concluded that increasing age is proved to be an independent risk factor for hypertension. Programs are needed to improve the surveillance systems and implementation of community based screening programs for early detection of hypertension is also needed.

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Please cite this article in press Muhammad Zulfiqar Abbasi et al., *Analysis of Different Risk Factors of Hypertension among Adults.*, Indo Am. J. P. Sci, 2018; 05(11).

**INTRODUCTION:**

Hypertension is a major public health problem due to its high prevalence all around the globe. Around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure. It is predicted to be increased to 1.56 billion adults with hypertension in 2025. Raised blood pressure is a major risk factor for chronic heart disease, stroke, and coronary heart disease. 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 mmHg. Hypertension is defined as systolic BP level of  $\geq 140$  mmHg and/or diastolic BP level  $\geq 90$  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 [2].

Hypertension is a state of elevated systemic blood pressure which is commonly asymptomatic. It is a major cardiovascular risk factor that is closely associated with lethal complications like coronary artery disease, cerebro-vascular accidents, heart and renal failure. Hypertension is an overwhelming global challenge, which ranks third as a means of reduction in disability-adjusted life-years. Besides, it is the leading cause of mortality [3]. Globally, nearly one billion people have hypertension; of these, two-thirds are in developing countries. The burden of chronic non-communicable diseases (NCDs) in developing countries has risen sharply in recent years [4]. The new epidemic of hypertension and cardiovascular diseases is not only an important public health problem, but it will also have a big economic impact as a significant proportion of the productive population becomes chronically ill or die, leaving their families in poverty [5].

**Background of the study**

Normal blood pressure is maintained by a balance between cardiac output and arterial resistance. In hypertension, workload on the heart is increased in order to deliver blood to the tissues and this exerts strain on the heart and the arteries. Over time, constant strain on the heart leads to cardiovascular dysfunction which contributes to other diseases such

as congestive heart failure, kidney failure and myocardial dysfunction. Certain mechanisms in the body are involved in regulating blood pressure. Kidneys play an important role in maintaining the systemic blood pressure by adjusting the sodium excretion rate [6]. This rate is maintained by the renin-angiotensin aldosterone system; this system is responsible for the renal vasoconstriction, which in turn leads to a reduced flow in the glomerulus leading to increase in  $\text{Na}^+$  retention in tubules. There are many causes of hypertension, the risk of hypertension increases with physical and behavioural attributes but is greatly influenced by demographic characteristics such as; gender, age and social status, intake of salt, obesity, family history, alcohol, stress and many other diseases [7].

**Objectives of the study**

The basic aim of the study is to find the different risk factors of hypertension among adults.

**METHODOLOGY OF THE STUDY:**

This study was carried out in Quaid-e-azam International Hospital, Islamabad 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  $n = 384$ . Since sampling procedure was multistage, hence considering the design effect, the sample size was further increased by one and half times. Individuals aged 25–64 years in the selected study area who gave consent for participation were considered. Participants were interviewed by trained interviewers using the WHO STEPS-structured questionnaire.

**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. Permission was obtained from hospitals research center and nephrology clinic.

**Statistical analysis**

The data of respiratory function were compared between the smoker and non-smoker groups using the independent t-test for normally distributed data or the Mann-Whitney U test for other distributions. Differences were considered statistically significant at  $p < 0.05$ .

**RESULTS:**

The mean and median ages of the study participants

were 35 and 32 years old respectively (Table 01). 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. On the other hand, 182 (37.4%) and 131 (26.9%) of the total respondents were Chat chewer and smoker respectively

**Table 1:** Socio-demographic characteristics of study participants in Jigjiga city, October–November 2014

Variables	Frequency	Percent
Sex		
Male	2381	48.9
Female	249	51.1
Age (years) [Mean = 35]		
25–34	285	58.5
35–44	125	25.7
45–54	48	9.9
55–65	29	6.0
Marital status		
Single	176	36.1
Married	254	52.2
Others	57	11.7
Highest level of education		
Illiterate	9	1.8
Literate but no formal education	34	7.0
Primary school (1–8)	104	21.4
Secondary school (9–12)	133	27.3
Certificate or higher	207	42.5
Income (birr)		
Low level	139	33.3
Medium level	157	37.6
High level	121	29.1

Table 02 shows the mean values of systolic and diastolic BP according to age and gender. The mean systolic and diastolic BP of all the study subjects were  $124.2 \pm 15.0$  mmHg and  $83.4 \pm 9.5$  mmHg, respectively. In men, the highest mean systolic BP and mean diastolic BP were among the eldest age group and preceding eldest age group.

**Table 2:** 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)	N640	Systolic BP (mean $\pm$ SD)			Diastolic BP (mean $\pm$ SD)		
		Male	Female	Total	Male	Female	Total
25–34	204	122.17 $\pm$ 9.54	114.81 $\pm$ 9.99	117.84 $\pm$ 10.44	82.92 $\pm$ 9.0	78.97 $\pm$ 7.46	80.59 $\pm$ 8.34
35–44	179	124.10 $\pm$ 10.77	121.71 $\pm$ 15.13	122.90 $\pm$ 13.07	85.70 $\pm$ 7.66	81.71 $\pm$ 9.30	83.75 $\pm$ 8.68
45–54	133	132.36 $\pm$ 13.21	127.16 $\pm$ 18.04	129.66 $\pm$ 16.05	89.23 $\pm$ 8.16	83.28 $\pm$ 10.22	86.14 $\pm$ 9.72
55–64	124	134.66 $\pm$ 19.53	127.27 $\pm$ 15.74	130.97 $\pm$ 18.05	86.42 $\pm$ 12.15	83.24 $\pm$ 9.32	84.83 $\pm$ 10.90
Total	640	127.49 $\pm$ 14.19	121.39 $\pm$ 15.26	124.25 $\pm$ 15.05	85.82 $\pm$ 9.43	81.34 $\pm$ 9.05	83.45 $\pm$ 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

**DISCUSSION:**

Hypertension is one of the leading causes of death around the world, killing 7.1 million people globally. Many studies have been performed on hypertension to know the prevalence and its associated risk factors. It is one of the most important health problems in developing countries. In the current survey; 219 participants aged 18 years or above, were interviewed and the results revealed that the prevalence of hypertension in our twin cities is 29.22%. Men exhibit higher prevalence of hypertension and prehypertension than their female counterparts and, respectively. Similarly, various studies came out with the higher percentage of hypertension in men than women [8]. One of the possible explanations for this gender disparity in hypertension prevalence could be partially due to biological sex difference and partially due to behavioral risk factors like smoking, alcohol consumption, or physical activity. We speculate that absence from alcohol and smoking might be few of those protective factors against hypertension in women. Other than that, women are more interested in health care services utilization and also more frequently report their poor health and therefore they are more likely to have better health [9].

Age was found to be an important risk factor for hypertension. As the age was advancing so did the prevalence of hypertension among both the sexes. 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 [10]. Low literacy level and being too rich were associated with hypertension. The higher education level was negatively correlated to hypertension in the present study. These studies also supported this finding [11]. We speculate that it could be due to the reason that higher education imparts better knowledge and information about hypertension and subsequently those people with higher education had a healthier lifestyle [12].

**CONCLUSION:**

It is concluded that increasing age is proved to be an independent risk factor for hypertension. Programs are needed to improve the surveillance systems and implementation of community based screening programs for early detection of hypertension is also needed.

**REFERENCES:**

1. Abebe S. M., Berhane Y., Worku A., Getachew A. Prevalence and associated factors of hypertension: a cross-sectional community based study in Northwest Ethiopia. *PLoS ONE*. 2015;10(4)
2. Tabrizi J. S., Sadeghi-Bazargani H., Farahbakhsh M., Nikniaz L., Nikniaz Z. Prevalence and associated factors of prehypertension and hypertension in Iranian population: the lifestyle promotion project (LPP) *PLoS ONE*. 2016;11(10)
3. Fisher N. D., Williams G. H. Hypertensive vascular disease. In: Kasper D. L., Braunwald E., Fauci A. S., et al., editors. *Harrison's Principles of Internal Medicine*. 16th. New York, NY, USA: McGraw-Hill; 2005. pp. 1463–1481.
4. Angkurawanon C., Wattanachariya N., Doyle P., Nitsch D. Urbanization and Non-communicable disease mortality in Thailand: an ecological correlation study. *Tropical Medicine & International Health*. 2013;18(2):130–140.
5. World Health Organization . Chronic diseases and health promotion. STEP wise approach to chronic disease risk factor surveillance (STEPS) Geneva: World Health Organization; 2010.
6. Njelekela MA, Mpembeni R, Muhihi A, et al. Gender-related differences in the prevalence of cardiovascular disease risk factors and their correlates in urban Tanzania. *BMC Cardiovasc Disord*. 2009;9:30.
7. Bayray A, Berhe H. Nutrition status and major risk factors of hypertension among adults in Tigray, North Ethiopia; a case control study. *Int J Pharm Sci Res*. 2012;3(11):4206–4212.
8. Hoang VM, Byass P, Dao LH, et al. Risk factors for chronic disease among rural Vietnamese adults and the association of these factors with socio-demographic variables: findings from the WHO STEPS survey in rural Vietnam, 2005. *Prev Chronic Dis*. 2007;4:A22.
9. Agyemang C. Rural and urban differences in blood pressure and hypertension in Ghana, West Africa. *Public Health*. 2006;120:525–533.
10. Angkurawanon C., Wattanachariya N., Doyle P., Nitsch D. Urbanization and Non-communicable disease mortality in Thailand: an ecological correlation study. *Tropical Medicine & International Health*. 2013;18(2):130–140. doi: 10.1111/tmi.12038.
11. Gao Y., Chen G., Tian H., et al. Prevalence of hypertension in China: a cross-sectional study. *PLoS ONE*. 2013;8(6) doi:

10.1371/journal.pone.0065938.e65938

12. Prabakaran J., Vijayalakshmi N., Ananthaiah Chetty N. Risk Factors of Non-Communicable Diseases in an Urban Locality of Andhra Pradesh. *National Journal of Research in Community Medicine*. 2013;2(1):p. 28.