

# ASSESSMENT OF RISK FACTORS FOR HYPERTENSION AMONG ADULT POPULATION OF HAYATABAD, PESHAWAR

Sara Gul<sup>1</sup>, Atif Hussain<sup>2</sup>, Muhammad Ishtiaq<sup>3</sup>, Zarka Ahmad<sup>3</sup>, Imranullah<sup>3</sup>, Muhammad Kamran Khalil<sup>2</sup>

<sup>1</sup>Rehman Medical Institute, Hayatabad, Peshawar - Pakistan

<sup>2</sup>Hayatabad Medical Complex, Peshawar - Pakistan

<sup>3</sup>Department of Community Medicine, Khyber Medical College, Peshawar - Pakistan

## ABSTRACT

**Objective:** To assess various risk factors and their relation with hypertension.

**Material and Methods:** This cross-sectional study of 500 adults of age 20-70 years was conducted from April 2014 to October 2014 in Hayatabad, Peshawar. Structured questionnaire was used to collect relevant information regarding different modifiable and non-modifiable risk factors.

**Results:** Our study results found that 25.6% of the adults found to be hypertensive. Approximately 70.6% were males while 29.4% were females; 26.6% were smokers; 2.4% ate predominantly meat; 26.8% were obese and overweight; 31.6% check B.P regularly; and 20.6% had positive family history of hypertension with higher chi square test value calculated at  $P = 0.05$ .

**Conclusion:** The prevalence of hypertension was high in adult population and showed significant positive association with advancing age, family history, type of diet, and physical inactivity, and thus lifestyle modifications along with strict adherence to preventive strategies are required to control and prevent hypertension.

**Key Words:** Hypertension, Prevalence, Diet, Family History, Adult Population.

## INTRODUCTION

Hypertension showed strongly relationship with age, smoking history, diet intake, lifestyle habits, and obesity. Hypertension is considered as one of the major non communicable disease burden and affects approximately 37-55% of the adult population worldwide. It is the most important modifiable cardiovascular risk factor for stroke, coronary artery disease, heart failure and end-stage renal disease, and it also increases all-cause mortality<sup>1</sup>. Trends in hypertension prevalence differ according to geographic and population characteristics. The United States reported an increase in prevalence from 23.9% in 1988-1994 to 28.5% in 1999-2000. Compared to USA, European countries have a higher prevalence of hypertension. In Switzerland, the prevalence of hypertension varied with age and gender between 20% and 50%<sup>2,3</sup>.

Hypertension is a condition that afflicts almost 970 Million people worldwide and is leading cause, morbidity and mortality. Hypertension is also called as "silent killer" as it is usually asymptomatic until the damaging effects are observed<sup>4</sup>. The WHO rates HTN as one of the most important causes of premature death worldwide. The Global and Regional Burden of Disease and Risk Factors study (2001), in a systematic analysis of population health data for attributable deaths and attributable disease burden, has ranked HTN second in the South Asia<sup>5</sup>.

Hypertension is ranked as the third most important risk factor for burden of disease in South Asia 2010<sup>6</sup> and its awareness ranged from 3.5% to 30%. These diseases are often asymptomatic and in most cases presentation is through complications<sup>7,8</sup>. Many International studies reported on the risk factors showing positive associated with HTN like age<sup>9</sup>, alcohol<sup>10</sup>, smoking, central obesity<sup>11</sup>, consumption of low vegetables/fruits, high consumption of dietary fat and salt<sup>12</sup>, and sedentary activities<sup>8,13</sup>. Prevalence of hypertension has been on the rise in recent decades which may be due to economic development, urbanization, aging, lifestyle

---

### Address for Correspondence:

**Dr. Muhammad Ishtiaq**

Assistant Professor

Department of Community Medicine,  
Khyber Medical College, Peshawar - Pakistan

Cell: 0334-9121822

Email: drishtiaq250@yahoo.com

changes, changing eating habits and deterioration of ecological environments<sup>14</sup>.

Pakistan is a developing country and thus having high prevalence of communicable and non-communicable diseases. The prevalence of hypertension is on rise in Pakistan due to obesity, dietary habits, lifestyle activities, salty and sweetish foods, and familial causes etc; so this cross sectional study was formulated to analyze the various risk factors of hypertension among the working people in Phase-5 Hayatabad, Peshawar; and to provide relevant information for prevention, control and management of hypertension.

## MATERIAL AND METHODS

A cross-sectional study was conducted to determine the prevalence of hypertension among the adult population of Phase-5 Hayatabad, Peshawar, Pakistan by the Department of Community Medicine, Pak International Medical College, Pakistan; from April 2014

**Table 1: Relationship of hypertension with age groups among adult population of Hayatabad, Peshawar**

Age in years	HTN	No HTN	Total with percentages
< 30	6 (10.9%)	49 (89.09%)	55 (11%)
30-40	12 (11%)	97 (88.99%)	109 (21.8%)
40-50	52 (28.41%)	131 (71.5%)	183 (36.6%)
50-60	49 (35.25%)	90 (64.74%)	139 (27.8%)
> 60	9 (64.3%)	5 (35.72%)	14 (2.8%)
Total	128 (25.6%)	372 (74.4%)	500

**Table 2: Relationship of hypertension with different variables among adult population of Hayatabad, Peshawar**

Variables	Response	Total f	HTN f
Regular B. P Checking	Yes	158 (31.60%)	35 (22.15%)
	No	342 (68.40%)	93 (27.19%)
Marital Status	Married	385 (77%)	107 (27.79%)
	Unmarried	115 (23%)	21 (18.26%)
Type of Diet	Meat Rich Diet	12 (2.4%)	5 (41.66%)
	Vegetables & Fruits	79 (15.8%)	19 (24.05%)
	Mixed Diet	409 (81.8%)	104 (25.42%)
Occupational Status	Teacher	223 (44.6%)	80 (35.87%)
	Clerks	105 (21%)	23 (21.9%)
	Supporting staff/ Peons	172 (34.4%)	25 (14.53%)

and October 2014. A sample size of 500 was selected from 20 to 70 years working individuals in Phase-5, Hayatabad, Peshawar; and data was collected through a structured questionnaire regarding different risk factors for hypertension along with measurements of age, sex, height, weight, economic status, occupation and family history etc. Adults having complications of hypertension and had duration of job less than one year were excluded from the study. Data regarding life style, smoking, diet, salt and alcohol consumption was also collected from the respondents. BP was measured using a manual mercury sphygmomanometer. A subject is said to be hypertensive if systolic blood pressure (SBP) was 140 mmHg and Diastolic blood pressure (DBP)  $\geq$  90 mmHg and if the subject was taking antihypertensive agents. Microsoft Word 2007 and SPSS 16 were used for statistical analysis.

## RESULTS

The main results of our study found that 128 (25.6%) of the respondents were hypertensive while 372(74.4%) were normotensive. 353(70.6%) were males while 147(29.4%) were females. Out of the 353 males; 87(27.5%) were found to be hypertensive; 266(72.5%) were found to have normal blood pressure, whereas among 147 females, 41(27.9%) were found to be hypertensive and 106(72.1%) of females had normal B.P. Our study results found that 11% were below age 30 years, 21.8% were in the group 30-40 years, 36.6% of the subjects were of age group 40-50 years, 27.8% were in the age group 50-60 years, while 2.8% were above age 60 years as were shown in Table 1. Table 2 shows relationship of hypertension with different variables;

**Table 3: Relationship of hypertension with body mass index, smoking, lifestyle habits & family history among adult population of Hayatabad, Peshawar**

Variable	HTN	No HTN	Total	$\chi^2$ Test*
Obese/ Overweight	56 (41.79%)	78 (58.21%)	134 (26.8%)	25.19
Underweight/ Normal	72 (19.67%)	294 (80.33%)	366 (73.2%)	
Smoking	59 (44.36%)	74 (53.64%)	133 (26.6%)	33.48
Not Smoking	69 (18.8%)	298 (81.2%)	367 (73.4%)	
Sedentary Life Style	22 (15.38%)	121 (84.62%)	143 (28.6%)	10.95
Active Life Habits	106 (29.69%)	251 (50.31%)	357 (71.4%)	
Positive Family History	43 (42.7%)	60 (57.3%)	103 (20.6%)	17.75
Negative Family History	85 (21.4%)	312 (78.6%)	397 (79.4%)	

\*Chi Square Test at P = 0.05

with hypertension prevalence. In our study; 20.6% had hypertension in the family, 26.6% were smokers, 28.6% had active lifestyle, 26.8% were obese/ overweight among study population as were shown in Table 3.

## DISCUSSION

Hypertension is common in 40 and above years, and affects approximately 50% of individuals. Our study results found that the prevalence of hypertension was 25.6% while according to different International studies, the prevalence was 17.7%, and 42.7%. Thus our study results were higher as compared to study published; having 2.5%<sup>15</sup>, 22%<sup>16</sup>, and 17.7%<sup>17</sup> respectfully. Moreover our study results had less prevalence as compared to international studies, which reported 42.7%<sup>18</sup> and 29.05%<sup>4</sup>.

According to our study analysis, the prevalence of hypertension among adult population was more prevalent above 40 years of age and was calculated as 91.66% as compared to younger ages as were revealed in many international and national studies. Many factors were associated and had higher risk of hypertension but advancing age showed strong positive correlation as were supported and revealed by our study results<sup>17,19</sup>. In many of the studies, the prevalence of hypertension was higher in men than in women at least up to the age of 40 years when the prevalence equalized<sup>20</sup>. In our study; out of 353 males 27.5% were hypertensive while out of 147 females 27.9% were hypertensive and thus there was no significant difference among prevalence of hypertension among male and female while many international studies showed higher prevalence in males as compared to females i.e. males 34%; females

24%<sup>17,19,21</sup>; whereas in another study it revealed 13.87% among males and 6.54% among females<sup>22</sup>.

Hypertension is a common, important and major global public health problem; having high prevalence and is considered to be a major factor for high morbidity and mortality in the developed and developing countries. Smoking was another factor which we assessed in our study. Among the smokers prevalence of hypertension was 44.36% while among non-smokers prevalence dropped to 18.8% which was supported by international studies showing 18.9% and 23.03% among the smokers<sup>17,22</sup>. Our study results revealed strong positive association of hypertension with family history by higher value of Chi Square Test at P = 0.05, which was supported by various national and international studies (48.57% with (P≤0.05)<sup>22,23</sup>.

According to various national and international studies, the prevalence of hypertension showed strongly relationship with age, smoking history, diet intake, lifestyle habits, and obesity as were revealed in different national and international studies as were also supported and confirmed by our study results and showed strong positive association<sup>22,23</sup>. Moreover, our study results showed strong positive association of hypertension with smoking, obesity, family history of hypertension, and sedentary life style which was confirmed by higher chi Square Test value at P = 0.05 as compared to 3.84 at 95%. 71.4% of the study population had reduced/ no physical activity while only 28.6% had normal physical activity, indicating that there was an increase prevalence of hypertension, who do less physical activity as compared to those who are physically active as was supported by international studies<sup>24,25</sup>.

## CONCLUSION

Great emphasis regarding public health programs for the detection, prevention, and control of hypertension along with associated risk factors are needed to reduce the epidemic of hypertension along with its consequences.

## REFERENCES

1. Preventing chronic diseases: a vital investment. World Health Organization 2005.
2. Wolf-Maier K, Cooper RS, Banegas JR, Giampaoli S, Hense HW, et al. Hypertension prevalence and blood pressure levels in 6 European countries, Canada, and the United States. *JAMA*. 2003; 289: 2363-69.
3. Danon-Hersch N, Marques-Vidal P, Bovet P, Chioloro A, Paccaud F, et al. Prevalence, awareness, treatment and control of high blood pressure in a Swiss city general population: the CoLaus study. *Eur J Cardiovasc Prev Rehabil*. 2009; 16: 66-72.
4. Talat N, Nabeel A, Naureen, A, A.Shah. Prevalence of hypertension amongst young, students at the time of entry in a Medical College of Punjab. *Pakistan Journal of Cardiology Sep 2001; 12(3): 57-60*.
5. Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJ. Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. *Lancet* 2006; 367: 1747-57.
6. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; 380: 2224-60.
7. Oladapo OO, Salako L, Sodiq O, Shoyinka K, Adedapo K, Falase AO. A prevalence of cardiometabolic risk factors among a rural Yoruba south-western Nigerian population: a population-based survey. *Cardiovasc J Afr*. 2010; 21: 26-31.
8. Okechukwu SO, Ikechi O, Innocent I.C, Joshua OA, Basden JCO, Ayodele OF, Simon Stewart, and Karen S. Blood pressure, prevalence of hypertension and hypertension related complications in Nigerian Africans: A review. *World J Cardiol*. 2012. 26; 4(12): 327-40.
9. Dutta A, Ray MR. Prevalence of hypertension and prehypertension in rural women: a report from the villages of West Bengal, a state in the eastern part of India. *Aust J Rural Health* 2012; 20: 219-25.
10. Meshram II, Arlappa N, Balkrishna N, Rao KM, Laxmaiah A, Brahmam GN. Prevalence of hypertension, its correlates and awareness among adult tribal population of Kerala state, India. *J Postgrad Med* 2012; 58: 255-61.
11. Sathish T, Kcannan S, Sarma PS, Razum O, Thankappan KR. Incidence of hypertension and its risk factors in rural Kerala, India: a community-based cohort study. *Public Health* 2012; 126: 25-32.
12. Beunza JJ, Martínez-González MA, Ebrahim S, Bes-Rastrollo M, Núñez J, et al. Sedentary behaviors and the risk of incident hypertension: the SUN Cohort. *Am J Hypertens* (2007); 20: 1156-62.
13. Idris G, Murielle B, Jean-Marc T, Jean-Michel G, and Antoinette P. 1999-2009 Trends in Prevalence, Unawareness, Treatment and Control of Hypertension in Geneva, Switzerland. *PLoS One*. 2012; 7(6): 396-403.
14. Yu-Quan M, Wen-Hua M, Ping Y, Xiao-Hui Y, Sana K.R, and Jian-Dong Y. Prevalence of Hypertension in Chinese Cities: A Meta-Analysis of Published Studies. *PLoS One*. 2013; 8(3): 583-87.
15. Fauzia Z, Ghulam R.Bh, Haroon H, Tahir M.A. Essential Hypertension In School-Going Children. *Pakistan Pediatrics Journal Sep 2005; 29(3): 133-38*.
16. Azizi F, Ghanbarian A, Madjid M, Rahmani M. (Endocrine Research Center, Shaheed Beheshti. Distribution of blood pressure and prevalence of hypertension in Tehran adult population. *Hypertension. Journal of American Heart Association*. 2002. 16(5): 305-312.
17. Raza M, Mahboob AA, Qais MS. Prevention of Hypertension in Punjab. *Pak J Med Res*. 2000; 39(3): 103-106.
18. Masoud MM, Arash E, Farin K, Hooman K, Asieh G, Farhad I, Akram P, Hossein P, Behrouz N, Mohammad N, Paul DP, Christian CA, Paul B., Paolo B, Sanford MD, Alireza E, & Reza M. Prevalence, awareness and risk factors of hypertension in a large cohort of Iranian adult population. *J hypertens*. 2013; 31(7): 1364-71.
19. Safdar S, Omair A, Faisal U, Hassan H. Prevalence of hypertension in a low income settlement of Karachi, Pakistan. *Journal of Pakistan Medical Association* 2004. 54: 506-10.
20. Ulasi II, Ijoma CK, Onodugo OD. A community-based study of hypertension and cardio-metabolic syndrome in semi-urban and rural communities in Nigeria. *BMC Health Serv Res*. 2010; 10: 71-83.
21. Hemna S, Anjum Q, Amir O, Jawed U, Raza R, Tabin-da A. Risk Factors Assessment For Hypertension In A Squatter Settlement of Karachi. *J Pak Med Assoc* 2005; 55(9): 390-92.

22. Muzamil J, Naseemullah M, Syed I, Iram SK. Prevalence and common predictors of Hypertension in the adult population of Rawalpindi-Islamabad Region. Journal of Rawalpindi Medical College. 1999; 3(1-2): 4-7.
23. Didem A, Unal A, Alaettin U, Mustafa T. Prevalence of Hypertension among individuals aged 50 years and over and its impact on Health Related Quality of life in a semi-rural area of Western Turkey. Chinese Medical Journal, 2008, 121(16): 1524-31.
24. Nazir A, Muhammad AK, Syed HS, Waqas A. Compliance to Antihypertensive Drugs, Salt Restriction, Exercise and control of Systemic Hypertension in Hypertensive patients at Abbottabad. Journal of Ayub Medical College Abbottabad. 2008; 20(2): 66-69.
25. Press V, Freestone I, George CF. Physical activity: the evidence of benefit in the prevention of coronary heart disease. QJM: Monthly Journal of the Association of Physicians. 2003; 96(4): 245-51.

### **AUTHOR'S CONTRIBUTION**

Following authors have made substantial contributions to the manuscript as under:

**Sara Gul:** Planned study and wrote manuscript.

**Atif Hussain:** Helped in manuscript writing and did statistical analysis.

**Muhammad Ishtiaq, Zarka Ahmad, Imranullah & Muhammad Kamran Khalil:** Helped in data collection and final manuscript writing.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**CONFLICT OF INTEREST:** Authors declare no conflict of interest

**GRANT SUPPORT AND FINANCIAL DISCLOSURE NIL**

## **ONLINE SUBMISSION OF MANUSCRIPT**

It is mandatory to submit the manuscripts at the following website of JMS. It is quick, convenient, cheap, requirement of HEC and paperless.

Website: **[www.jmedsci.com](http://www.jmedsci.com)**

The intending writers are expected to first register themselves and then attach/submit the manuscript. If processing fee is not submitted before should be deposited with Managing Editor in cash or can submit in the form of bank draft in the name of editor JMS. Also follow the format and check list of the Journal. Author agreement can be easily downloaded from our website. A duly signed author agreement must accompany initial submission of the manuscript.