

# COMPLICATIONS AMONG HYPERTENSIVE PATIENTS ADMITTED TO MEDICAL & INTENSIVE CARE UNITS

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## ABSTRACT

**Objectives:** To assess the prevalence of different complications among hypertensive patients admitted in Medical Intensive Care Units.

**Material and Methods:** This study was conducted in Medical Units and ICU of Khyber Teaching Hospital, Peshawar, Pakistan from September 2014 to February 2015. It was across-sectional study of 219 hypertensive patients, ages between 20 to 70 All the hypertensive patients who had given consent were included and relevant data regarding complications was collected from the patient's record by means of a structured questionnaire.

**Results:** Most of the patients were males (60.29%) and male to female ratio was approximately 1.5:1, 42.58% had age above 60 years, 11.96% had less than 5 years, 25.36% had more than 10 years, while 62.68% had 5-10 years duration of hypertension. Moreover, 56.45% were obese, 35.4% were smokers, 70.33% had positive history of family hypertension and 59.33% had sedentary life style habits. Out of all hypertensive patients, following complications were noticed; blood vessel (20.57%), cardiac (64.59%), brain (13.88%), renal (29.67%), eye (15.79%) and miscellaneous (67.94%).

**Conclusion:** Effective control of hypertension can reduce the risk of blood vessel, cardiac, brain and renal complications of hypertension.

**Key Words:** Hypertension, Heart Failure, Nephropathy, Retinopathy.

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## INTRODUCTION

Hypertension is a chronic, non-communicable, important and major global public health problem and its prevalence has been found to be above 40% in Europe and 25% in USA<sup>1</sup>. Hypertension is a silent killer and is a major risk factor for high morbidity and mortality in the developed as well as developing countries<sup>2,3</sup>.

The prevalence of hypertension is growing rapidly due to epidemiological transition, economic improvements, urbanization and higher life expectancy. It is estimated that by 2025, the number of individuals with hypertension in developing countries will be approxi-

mately 1.17 billion, representing almost three-fourths of the world's hypertensive population<sup>4</sup>.

Hypertension affects 20% to 50% of the adult population and is the most common modifiable risk factor for coronary heart diseases, heart failure, stroke, peripheral arterial disease, and renal failure<sup>5,6,7</sup>. Hypertension is common, especially in individuals aged 40 years and over, and it affects about half of the population aged 60 and above<sup>7,8</sup>. Many International studies reported on the risk factors showing positive association like age, smoking, central obesity and sedentary activities<sup>9-12</sup>.

Hypertension acts as a dependent risk factor for cardiac diseases, neurological diseases, kidney problems and blood vessel problems<sup>13-16</sup>. Hypertension leads to left ventricular hypertrophy, diastolic abnormalities, CHF, atherosclerosis of coronary arteries, small vascular diseases, cardiac arrhythmias and thus finally resulting in stroke, CHF and sudden death.<sup>17,18</sup>

Hypertension is an important risk factor for brain infarction, hemorrhage<sup>19</sup>, cognitive impairment and

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dementia. Persistent high blood pressure or malignant hypertension results in hypertensive encephalopathy causing severe headache, nausea, vomiting and may progress to coma, seizures and death<sup>20,21</sup>. Hypertensive retinopathy is seen in individuals with high blood pressure resulting in vasoconstriction, exudative changes of micro-aneurysms, hemorrhages, hard exudates, retinal ischemia and finally optic disk swelling. Macroaneurysm and occlusion of retinal vein in patients with chronically elevated blood pressure resulting in retinal hemorrhage and micro-aneurysm<sup>22,23</sup>. Hypertension is also a major risk factor for renal injury and End Stage Renal Diseases<sup>24,25</sup>. Clinically the renal complications were evident by macro-albuminuria or micro-albuminuria which indicates that renal injury had occurred<sup>24</sup>.

Pakistan is a developing country and thus having high prevalence of communicable and non-communicable diseases. The prevalence of hypertension as well as its complications are on rise in Pakistan due to obesity, dietary habits, lifestyle activities, smoking and familial causes; so this cross sectional study was conducted to assess different hypertension related complications among patients admitted to medical units and ICU of Khyber Teaching Hospital, Peshawar and to provide sufficient information to prevent and control this highly fatal chronic condition.

### MATERIAL AND METHODS

A cross-sectional study was conducted to assess different complications among hypertension patients admitted to KTH Peshawar, Pakistan from September 2014 to February 2015. A sample size of 209 was selected between ages 20-70 years and data was collected through a structured questionnaire regarding different risk factors. Individuals having hypertension before any systemic complications were selected and thus diabetes mellitus and other co-morbid associations were excluded to avoid confounding effects. For effective data reporting, doctors of nephrology, CCU, ICU and Eye units were also involved. Microsoft Word 2007 and SPSS 16 were used for statistical analysis. Data was presented in the form of tables.

### RESULTS

Out of all hypertensive patients; 62.68% had 5 to 10 years duration of hypertension, 36.84% had regular checkup on their B.P, 77.03% were married, 56.45% were obese, 59.33% had sedentary life style habits and 35.40% had smoking history as were shown in Table 1. The age & sex distribution of hypertensive patients (n=209) were shown in Table No. 2 The frequency and percentage of various complications among hypertensive patients were shown in Table 3.

**Table No 1: Frequency of different variables among hypertensive patients (n=209) of KTH, Peshawar**

Variables	Response	Frequency (%)
Duration of HTN	< 5 years	25 (11.96%)
	5- 10 Years	131 (62.68%)
	> 10	53 (25.36%)
Regular B.P Checkup	Yes	77 (36.84%)
	No	132 (63.16%)
Family history of HTN	Yes	147 (70.33%)
	No	62 (29.67%)
Marital Status	Married	161 (77.03%)
	Unmarried	48 (22.97%)
Life style habits	Sedentary Lifestyle	124 (59.33%)
	Active Lifestyle	85 (40.67%)
BMI class	Obese	118 (56.45%)
	Not obese	91 (43.55%)
Smoking status	Smoking	74 (35.40%)
	Not Smoking	135 (64.60%)

**Tables No 2: Age & Sex distribution of hypertensive patients (n=209) of KTH, Peshawar**

Age Groups	Male	Female	Total (%)
< 40 years	27	14	41 (19.61%)
40-60 Years	41	38	79 (37.79%)
> 60 Years	58	31	89 (42.58%)
Total	126 (60.29%)	83 (39.71%)	209

**Table No 3: Frequency of different complications among patients**

S. No	Type of Complications	No. of patients & percentage
1.	Blood Vessel Complications	43 (20.57%)
2.	Heart Complications	135 (64.59%)
3.	CNS Complications	29 (13.88%)
4.	Kidney Complications	62 (29.67%)
5.	Hypertensive Retinopathy	33 (15.79%)
6.	Other Miscellaneous Complications	142 (67.94%)

### DISCUSSION

Among the hypertensive patients having complications; 60.29% were males while the remaining 39.71% were females and thus higher prevalence among male population as were revealed and supported in the current hypertension report in 2014; which showed the same trend among the males<sup>26</sup>. Moreover in our study the prevalence was more in individuals aged 60 (42.58%) as revealed in international studies<sup>27</sup>. Prevalence of hypertension in patients aged >48 years was 19.61% and patients age between 40-60 years was 37.79%.

Our study results assessed many complications among the hypertensive patients i.e. blood vessel, cardiac, brain, renal, eye and miscellaneous complications. Among the blood vessel complications in hypertensive patients; atherosclerosis and aneurysm was present in 43 (20.57%) patients as were supported and revealed by many international studies<sup>28</sup>. In many studies published internationally; reported vast majority of hypertensive cardiac complications as were found in our study showing 135 (64.59%); consists of left ventricular hypertrophy, coronary artery disease, heart failure, diastolic dysfunction, cardiac arrhythmias and sudden death<sup>29</sup>. Among the CNS complications; brain infarction was at the top, followed by brain hemorrhage, hypertensive encephalopathy as were assessed and confirmed by international studies among hypertensive patients<sup>28</sup>. Our study results showed 62 (29.67%) of renal complications among the hypertensive patients; comprising of renal failure, micro & macro albuminuria, renal injury and ESRDs as were reported and supported by international studies<sup>29</sup>. Our study results also revealed different hypertensive retinopathic changes as 33 (15.79%) as were previously reported in different international studies<sup>30</sup>.

Besides these main complications many other complications were reported among the hypertensive patients i.e. metabolic syndrome disorders, cognitive impairment & dementia, metabolic syndrome, premature birth/low birth weight, loss of libido, erectile dysfunction and pre-eclampsia showed prevalence of 142 (67.94%); as were nationally and internationally revealed in many research studies<sup>20,28,29</sup>.

Patients having hypertension of duration 5 to 10 years had greater incidence of hypertension complications (62.68%) than those having duration of hypertension more than 10 years (25.36%). Incidence of complications in those having hypertension of duration less than 5 years were 11.96%. Most of the complications of hypertension is due to the fact that hypertension is a silent disease so patients do not check their blood pressure regularly. Regular Blood pressure checks were present in only 36.84% of our patients. Hypertension is a common, important and major global public health problem and is considered to be a major factor for high morbidity and mortality in the developed and developing

countries. Smoking was another main variable which we assessed in our study and its frequency was 35.40% in the patients. Family history of hypertension was positive in 70.33% of the patients. 77.03% of the patients were married. 59.33% has sedentary life styles while 56.45% were obese. According to the international study done in Brazil, the most common complication of hypertension was cardiovascular disease having frequency of 33.9% while frequency of neurological complication were 11.3%<sup>31</sup>. Thus, in comparison the incidence of cardiovascular and neurological complication are much higher in our study.

According to American heart Journal, frequency of cardiac complications were 27.4% and neurological complication were 20.2%. Thus frequencies of cardiac complication is less and neurological complication is higher as compare to our study.

According to National health and Nutrition Examination Survey (NHANES) of united State 2016, the leading complication of hypertension is cardiac disease (23%), followed by neurological disease (5%) while renal complication constitute less 2%<sup>31</sup>. Study in Saudia Arabia in 2001 concludes that ischemic heart disease and cerebrovascular accidents are most common complications of hypertension<sup>32</sup> Our study also concur with the above studies such that cardiac, neurological and renal manifestations as most common complications of hypertension.

### CONCLUSION

Our study concludes that the prevalence of complications among hypertensive patients was high.

### Recommendations

Proper monitoring of identified risk factors, adequate management of hypertension with modern guidelines was needed to avoid complications and to prevent the associated morbidity and mortality.

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### AUTHOR'S CONTRIBUTION

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

- Inayat A:** Planned study and wrote manuscript.  
**Faisal MS:** Helped in data collection and manuscript writing.  
**Hayat W:** Bibliography.  
**Shabber G:** Critical review.  
**Ishtiaq M:** Statistical analysis.

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.