



HYPERTENSION IN CHRONIC KIDNEY DISEASE: A TERTIARY CARE CENTER STUDY.

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ABSTRACT **Background:** This study was conducted to evaluate the relative impact of HTN on CKD and ESRD risk and related complications. **Materials and method:** A prospective cross sectional study was performed all CKD patients admitted in the department of General Medicine, Chirayu Medical college & Hospital. In the present study, We assessed the impact of HTN (SBP \geq 140 mmHg) compared to the ideal BP (SBP < 120 mmHg). The outcomes considered were CKD, defined as an estimated glomerular function. **Result and Conclusion:** Hypertension is a crucial risk factor for the development of CKD, progression of end stage renal disease, cardiovascular disease and mortality.

KEYWORDS : Hypertension, chronic kidney disease, cardiovascular disease, ESRD.

INTRODUCTION:

Chronic kidney disease (CKD) is one of the leading public health problems that affect millions of women and men worldwide^{1,2}. Hypertension (HTN) is a crucial risk factor for the development of CKD³, progression to end-stage renal disease (ESRD)⁴, cardiovascular disease (CVD)⁵, and mortality⁶. Accordingly, several guidelines recommend early detection and treatment of HTN to delay the disease's progression and reduce its complications in both sexes^{7,8}.

The Systolic Blood Pressure Intervention Trial provided important information about the effects of a more stringent lowering of systolic blood pressure to a target of <130mmHg that may be relevant to CKD patients; although, this trial excluded high-risk subjects with CKD, proteinuria, or diabetes. Lifestyle modifications, such as weight loss and dietary salt restriction, may also improve the blood pressure control. Such interventions can be lower in cost than pharmacological therapies and have the potential to affect outcomes, such as heart failure and stroke, in both developed health care systems and low- and middle-income countries (LMICs). Since many antihypertensive agents are available and affordable in LMICs, one feasible goal would be to improve the control of high blood pressure complications in CKD patients, aiming to achieve target ranges in a proportion of patients. Such a goal can be attained globally, and its impact is easily measurable.

HTN has been reported to occur in 85% to 95% of patients with CKD (stages 3- 5). The relationship between HTN and CKD is cyclic in nature. Uncontrolled HTN is a risk factor for developing CKD, is associated with a more rapid progression of CKD, and is the second leading cause of ESRD in the U.S. Meanwhile, progressive renal disease can exacerbate uncontrolled HTN due to volume expansion and increased systemic vascular resistance. Multiple guidelines discuss the importance of lowering blood pressure (BP) to slow the progression of renal disease and reduce cardiovascular morbidity and mortality. However, in order to achieve and maintain adequate BP control, most patients with CKD require combinations of antihypertensive agents; often up to three or four medication classes may need to be employed.⁹

The aim of present study is to find the hypertension in chronic kidney disease and achieve target bloodpressure by appropriate measures to reduce the disease progression, cardiovascular disease and related mortality.

MATERIAL & METHODS:

A prospective cross sectional study was performed all CKD patients admitted in the department of General Medicine, Chirayu Medical college & Hospital, Bhopal.

In the present study, We assessed the impact of HTN (SBP \geq 140 mmHg) compared to the ideal BP (SBP < 120 mmHg). The outcomes considered were CKD, defined as an estimated glomerular function (eGFR) < 60 mL/min/1.73m² and ESRD, defined as the initiation of dialysis, renal transplantation, or death due to kidney disease.

RESULTS:

Table-1: Association between hypertension status and CKD Grade

		CKD GRADE				Total	P-value
		II	III	IV	V		
HYPERTENSION	Absent	count	8	35	103	17	163 0.002
		%	4.9%	21.5%	63.2%	10.4%	
	present	count	6	38	110	33	
		%	3.2%	20.3%	58.8%	17.6%	

Out of 187 patients who had hypertension, majority had grade IV CKD (58.8%) followed by grade III CKD (20.3%). The p value for the comparison was significant (p=0.002). This highlights that presence of hypertension is a significant risk factor for worst kidney disease.

Table-2: Association between eGFR and CKD Grade

CKD GRADE	MEAN	SD	P-Value
II	62.61	2.654	<0.001
III	45.41	8.347	
IV	21.82	4.684	
V	9.52	2.284	

On comparing the mean eGFR between CKD Grade, it was revealed that patients with higher grades of CKD had significantly reduced level of eGFR as revealed by the significant p value of <0.001.

DISCUSSION:

The majority of the hypertensive patients in our study had grade IV chronic kidney disease (58.8%), followed by grade III chronic kidney disease (20.3%). There was a significant difference (p=0.002) between the two categories of hypertensive patients with regard to their renal health.

The prevalence of chronic kidney disease (CKD) stages 3 and stages 4-5 in patients who had hypertension was found to be 33.2% and 4.3%, respectively, in a study that was conducted by Krittayaphong et al¹⁰.

According to the findings of the research that was carried out by Gomez and colleagues, the prevalence of CKD stages 3-5 in people who had been diagnosed with hypertension was roughly 23%¹¹.

Patients who already have chronic kidney disease (CKD) have an increased chance of developing hypertension, not only due to the linked hardening of their arteries, but also due to the volume overload that they experience. Uncontrolled hypertension is one of the major risk factors for chronic kidney disease (CKD), and patients who already have CKD have an increased chance of developing hypertension. According to the findings of a study that was carried out all over the world, patients who are at a high risk for cardiovascular illness, such as hypertension, have a significantly increased prevalence of chronic kidney disease. This information was gleaned from looking at patients' medical histories. 102 Patients who had a glomerular filtration rate (GFR) that was lower than 30 millilitres per minute had a prevalence of left ventricular hypertrophy that reached as high as fifty percent¹².

Patients who have been given a diagnosis of hypertension and are treated for their condition have a significantly increased likelihood of avoiding the development of chronic renal disease (CKD)¹³.

It has been proposed that the target blood pressure for people who suffer from chronic kidney disease (CKD) should be set higher than it is for those who do not suffer from the condition¹⁴.

CONCLUSION:

Hypertension is both the source and result of chronic kidney disease. Our study concluded that achieving the target blood pressure by medications or dialysis in chronic kidney disease will help to reduce the acceleration of progressive decline in renal function, cardiovascular disease and related mortality.

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