

A Study on Prevalence of Hypertension among Chronic Kidney Disease Patients admitted in the Nephrology Department of CAIMS, Karimnagar

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ABSTRACT

Aim : Chronic kidney disease (CKD) is an increasingly recognized global health problem. Hypertension is a risk factor and complication of chronic renal disease. Studies have shown that better blood pressure control slows progression of chronic kidney disease. To study the prevalence of hypertension among chronic kidney disease patients attending to nephrology department. To know the association of other risk factors with hypertension and chronic kidney disease.

Materials and Methods: Retrospective cross sectional study was done from June to November 2013, chronic kidney disease patients admitted in the nephrology ward are included in the study. Data analyzed by spss software version 20.

Results : Total study subjects - 306, Mean age in years 46.36±11.13, Age ranging from 13 to 73yrs. Age had a significant association with ckd (86% >40yrs). Prevalence of hypertension amongst patients with ckd is 81.35%. Hypertension is increasingly associated with an advanced stage of chronic kidney disease (90% in stage-4 CKD). Smoking was a significant risk factor for hypertension among CKD patients (88%). Alcohol consumption had a significant association with hypertension among CKD patients (89%).

Conclusion : All efforts should be made to detect and strictly control hypertension in prevention and management of ckd. As an initial step, individuals aged more than 40 years and with family history of ckd should be screened for hypertension and ckd. Increased efforts are needed to identify the reasons for inadequate control of hypertension and approaches to increase blood pressure control among patients with CKD. CKD patients with hypertension should be regularly screened for cardiovascular disease.

Key words: Hypertension, chronic kidney disease, dialysis, life style changes.

INTRODUCTION

Chronic kidney disease is an increasingly recognized global health problem. Hypertension is both a risk factor and complication of chronic renal disease^[1, 2]. The incidence of new end-stage renal failure (ESRF) treated with dialysis has risen to near-doubling in many Asian countries have seen in large part due to an increasing incidence of the risk factors for renal disease^[3,4,5]. Consequent to this high incidence of ESRF, at the end of 2002, an estimated 301,649 patients were on dialysis in Asia^[6]. Many Studies have shown that hypertension is a

risk factor for progression of renal failure independent of underlying renal disease; better blood pressure control slows progression to chronic kidney disease^[7, 8]. Strict control of blood pressure will reduce the risk of heart disease, which for most patients with chronic kidney disease, is more of an immediate threat than end stage renal disease^[9]. Our Aims of study is to study the prevalence of hypertension among chronic kidney disease patients attending to Nephrology department of CAIMS Karimnagar. To know the association of other risk factors with hypertension and chronic kidney disease.

MATERIALS AND METHODS

• **Study design:** A cross sectional study. Study period- April to December 2013, Study area: The department of Nephrology, CAIMS, Karimnagar, Telangana.

Study subjects: The chronic kidney disease patients admitted in the nephrology ward from April to December 2013 are included in the study and are interviewed and examined with a pre-designed semi structured questionnaire. 306 study subjects are included in the study; they are interviewed and examined after obtaining informed consent. Study was done after obtaining permission from the ethical committee. Three readings of blood pressure measurements were obtained in the sitting position after at least 5 minutes of quite rest. Renal disease is defined as presence of at least one of the following feature; Either kidney damage or a decreased glomerular filtration rate (GFR) of less than 60 mL/min/1.73 m² for 3 or more months, proteinuria, hematuria, other alterations of renal functions (or) evidence of renal disease through radiological techniques or histological techniques. Hypertension is defined as an SBP or DBP =140 mm Hg or =90 mm Hg, respectively.

Stages of Chronic Kidney Disease include:

- Stage 1: Kidney damage with normal or increased GFR (>90 mL/min/1.73 m²)
- Stage 2: Mild reduction in GFR (60-89 mL/min/1.73 m²)
- Stage 3: Moderate reduction in GFR (30-59 mL/min/1.73 m²)
- Stage 4: Severe reduction in GFR (15-29 mL/min/1.73 m²)
- Stage 5: Kidney failure (GFR < 15 mL/min/1.73 m² or dialysis)
- Statistical analysis: Data was analyzed by spss software version 20.

RESULTS

Age distribution of the study subjects: Total study subjects - 306. Mean age in years : 46.36 ±11.13.

Table 1: Socio-Demographic Distribution

Socio demographic variables	Hypertension Present	Hypertension Absent	P-value
Male	178 (84.76%)	32 (15.24%)	> 0.05
Female	74 (77.08%)	22 (22.92%)	
< 40y	34 (65.38%)	18 (34.62%)	<0.05
= 40y	218 (85.83%)	36 (14.17%)	
<12y of education	216 (81.20%)	50 (18.80%)	> 0.05
>12y of education	36 (90%)	4 (10%)	

Age ranging from 13 to 73 years.

Age had a significant association where as gender, education, has no influence.

Table 2: Prevalence of hypertension among chronic kidney disease patients:

Hypertension	Number	%
Yes	253	81.35%
No	53	18.65%
Total	306	100%

Prevalence of hypertension amongst patients with CKD is 81.35%.

Table 3: Hypertension vs stage of chronic kidney disease

	CKD stage 3	CKD stage 4	Total	x ² value:
Hypertensive's	24 (9.52%)	228 (90.48%)	22 (100%)	5.5001
Normotensive's	14 (25.93%)	40 (74.07%)	54 (100%)	
Total	38 (12.42%)	268 (87.58%)	306(100%)	< 0.05

Hypertension is increasingly associated with an advanced stage of chronic kidney disease which is significant.

Table 4: Hypertension and Family History of chronic kidney disease among CKD patients:

Subjects	Family history of CKD		Total	x ² value:
	Present	Absent		
Hypertensives	58 (23.02%)	194 (76.98%)	252 (100%)	6.2425
Normotensives	0 (0%)	54 (100%)	54 (100%)	
Total	58 (18.95%)	248 (81.05%)	306 (100%)	<0.05

Family history of CKD is significantly associated with the occurrence of Hypertension among CKD patients.

Table 5: Smoking vs Hypertension among male chronic kidney disease patients(n=210)

Smoking	Hypertensive's	Normotensive's	Total	x ² value:
Present	150 (88.24%)	20(11.76%)	170 (100%)	4.1683
Absent	28 (70%)	12 (30%)	40 (100%)	
Total	178 (84.76%)	32 (15.24%)	210 (100%)	< 0.05

Smoking was a significant risk factor for hypertension among CKD patients.

Table 6: Alcohol vs hypertension among male chronic kidney disease patients (n=210)

Consumption of Alcohol	Hypertensive's	Normotensive's	Total	x ² value: 4.6730 P-value: < 0.05
Yes	144 (88.89%)	18 (11.11%)	162 (100%)	
No	34 (70.83%)	14(29.17%)	48 (100%)	
Total	178 (84.76%)	32(15.24%)	210 (100%)	

Alcohol consumption had a significant association with hypertension among CKD patients.

Table 7: Hypertension vs heart disease among chronic kidney disease patients

Subjects	Heart disease		Total	x ² value: 4.9302 P-value: <0.05
	Present	Absent		
Hypertensive's	40(15.87%)	212 (84.13%)	252(100%)	
Normotensive's	0 (0%)	54 (100%)	54 (100%)	
Total	40(13.01%)	266 (86.93%)	306(100%)	

Presence of Hypertension has an increased risk for Heart disease.

Table 8: Control of hypertension vs heart disease among CKD patients:

Subjects	Heart disease		Total	x ² value: 15.1721 P-value: <0.05
	Present	Absent		
Under control	6 (4.35%)	132 (95.65%)	138 (100%)	
Inadequate control	34 (29.82%)	80 (70.18%)	114 (100%)	
Total	40 (15.87%)	212 (84.13%)	252(100%)	

Uncontrolled hypertension had a significant association with occurrence of heart disease.

DISCUSSION

This study revealed overall prevalence of hypertension to be 81.36%, which corresponds to the figure of 80% noted by a study done by Dr. Ronald M, Goldin et al^[10]. In a study done by JA. Whitworth et al showed that more than half the patients with CKD die from a cardiac or vascular event^[11]. In a study done by He J et al showed that adults using healthy lifestyle changes were six times more likely to have controlled hypertension^[12]. This study revealed prevalence of hypertension among CKD patients to be 81.36%.

In this study we observed factors other than degree of renal failure which influence the prevalence of hypertension in chronic kidney disease patients like: Increasing age (>40 yrs) had a significant association with hypertension among CKD patients, Individuals with hypertension and family history of CKD had increased

risk of developing CKD, Smoking and Alcohol consumption had a significant association with hypertension among CKD patients. Presence of hypertension had an increased risk for heart disease among CKD patients. Inadequately controlled hypertension had significant association with occurrence of heart disease.



Hypertension is found frequently in patients with Renal disease and its prevalence is influenced by variety of factors ,the most important factor of these is degree of renal failure given that as renal function deteriorates the frequency of hypertension increases significantly to such an extent that virtually all patients starting dialysis may be hypertensive. Finally we conclude that there is high prevalence of hypertension in chronic kidney disease patients, advancing age, smoking, and alcohol consumption contribute indirectly as risk factors for developing hypertension in chronic kidney disease patients.

RECOMMENDATIONS

As an initial step, individuals aged more than 40 years and with family history of CKD should be screened for hypertension and CKD. Increased efforts are needed to identify the reasons for inadequate control of hypertension and approaches to increase blood pressure control among patients with CKD^[13, 14]. All efforts should be made to detect and strictly control hypertension in prevention and management of CKD^[15]. The greatest long-term potential for avoiding hypertension is to apply prevention strategies early in life. Changes in life style (smoking, alcohol) are also necessary for control of hypertension along with pharmacological treatment. High blood pressure prevention and treatment should encourage lifestyle changes in children, as well as adults. CKD patients with hypertension should be regularly screened for cardiovascular disease^[16, 17].

Life style modifications of primary prevention of Hypertension:^[18-28]

1. Engage in regular aerobic physical activity such as brisk walking (at least 30 minutes per day, most days of the week).
2. Maintain normal body weight for adults (body mass index 18.5 – 24.9 kg/m²). A sustained weight loss of 9.7 lb (4.4kg) or more can reduce systolic and diastolic blood pressure by 5.0 and 7.0 mmHg, respectively.
3. Limit alcohol consumption to no more than (30 mL) ethanol (e.g., [720 mL] of beer, [300 mL] of wine, or [60 mL] 100-proof whiskey) per day in most Men and to no more than (15 mL) of ethanol per day in women and lighter Weight persons.
4. Reduce dietary sodium intake to no more than 100 mmol per day (approximately 2.4 g of sodium or 6 g of sodium chloride) Lower intake of dietary sodium reduces the risk of cardiovascular disease, especially in those who are also overweight..
5. Maintain adequate intake of dietary potassium (more than 90 mmol [3,500 mg] per day).
6. Consume a diet that is rich in fruits and vegetables and in low fat dairy products with a reduced content of saturated and total fat (Dietary Approaches to Stop Hypertension [DASH] eating plan).

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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