

Original Research Article

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## Clinical profile of hemodialysis patients attending a tertiary care hospital in Delhi, India

**Mithilesh Kumar<sup>1\*</sup>, Shipra Saini<sup>1</sup>, Lokesh Parashar<sup>1</sup>, Rajesh Chetiwal<sup>2</sup>,  
Tanisha Kalra<sup>3</sup>, Nikhita Kalra<sup>3</sup>**

<sup>1</sup>Department of Community Medicine, ESIC Medical College and Hospital, Faridabad, Haryana, India

<sup>2</sup>Department of Medicine, ESIC PGIMER and Model Hospital, Basaidarapur, New Delhi, India

<sup>3</sup>Department of Interns, Maulana Azad Medical College, New Delhi, India

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**\*Correspondence:**

Dr. Mithilesh Kumar,

E-mail: dr.mithilesh@gmail.com

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### ABSTRACT

**Background:** CKD (chronic kidney disease) is one of the major complications of diabetes and hypertension. With increase in prevalence of non-communicable diseases, the patients presenting with the symptoms of CKD are also rising. Most of the patients suffering from CKD eventually land up on renal replacement therapy, putting extra burden economically as well as psychologically to the self and their family. The aim of the study is to find out the socio demographic and clinical profile of the patients suffering from CKD attending a tertiary care hospital in Delhi.

**Methods:** It was a record based descriptive analysis, conducted between January 2019 and June 2019 in one of the ESIC (Employee State Insurance Corporation) hospital of Delhi. Medical Records of the only those patients were considered whose complete data were present in the record file. Data about Socio demographic profiles , clinical data, duration of CKD, duration of haemodialysis, viral markers, number of blood transfusions, vascular access, number of failed AV fistula etc. were entered in MS Excel and analysed through SPSS 11.

**Results:** Hospital records of 473 CKD patients undergoing hemodialysis were analyzed. It was found that 315 (67%) were males and 158 (33%) were females. Majority of the patients i.e. 245 were in the age group of 41-60 years followed by 166 who were in the age group of 21 to 40. Out of total patients, 195 (41.2%) participants were undergoing hemodialysis twice a week, 276 (58.4%) thrice a week, 2 (0.4) patients were undergoing hemodialysis session four times a week. Majority of the participants i.e. 414 (88%) were Hindu. Out of total 473 participants, 439 (93%) participants had sero negative for viral marker (i.e. HbsAg, HCV, HIV I and II) and 33 (7%) participants were sero positive for viral marker. Most common etiology of CKD was found to be hypertension in our study followed by diabetes.

**Conclusions:** Patients suffering from chronic kidney diseases are increasing day by day with increasing prevalence of hypertension. Most of the patients of CKD patients were middle aged males. Most of the patients have to visit 3 times a week to any health care institution for hemodialysis. Many of the patients are getting infected with viral hepatitis during course of the illness.

**Keywords:** AV fistula, Chronic kidney disease, ESRD, Hemodialysis, Renal failure

## INTRODUCTION

Chronic kidney disease (CKD) is emerging as an important public health problem, not only in developed countries, but also in developing countries.<sup>1</sup> Chronic kidney disease (CKD) is a condition in which the kidneys are damaged and cannot filter blood properly. Because of this, excess fluid and waste from the blood remain in the body and may cause other health problems.<sup>2</sup> End-stage renal disease (ESRD) is the most advanced stage of CKD when the kidneys can no longer maintain homeostasis of the body and the patient depends on dialysis or kidney transplant.<sup>3</sup> WHO has identified kidney diseases as 12<sup>th</sup> and 17<sup>th</sup> major cause of death and disability worldwide, respectively.<sup>4</sup> In the Indian population the exact disease burden of CKD/ESRD cannot be assessed accurately due to the absence of a renal registry.<sup>5</sup> It has been estimated that the prevalence of ESRD will rise over the next decades, driven by population aging, and increasing prevalence of diabetes mellitus and hypertension.<sup>6</sup>

The present study was conducted to find out the clinical, socio demographic and etiological profile of the CKD patients on hemodialysis who were attending to a tertiary care hospital in Delhi, India.

## METHODS

The study was based on the medical records of the patients' attended in Nephrology Unit of ESIC PGIMSR, Basaidarapur New Delhi. Case Sheets of 473 patients were retrieved as per inclusion criteria from January 2019 to June 2019. For all the patients, following data was extracted: socio demographic profiles including age (in years), sex, education status, occupation, clinical data: etiology (if mentioned on the case sheet by the treating physician), duration of CKD, duration of hemodialysis, viral markers, number of blood transfusions, vascular access, number of failed AV fistula etc.

### Statistical analysis

Data was entered in MS excel and analysis was performed using SPSS version 11. In the descriptive analysis, continuous variables were expressed as mean  $\pm$  standard deviation (SD) and categorical variables were expressed as count (percentages). Non-parametric test Pearson Chi square test was used to study the association between categorical variables.  $P \leq 0.05$  were considered to be statistically significant.

### Inclusion criteria

Case sheets of the patients diagnosed as chronic kidney disease on hemodialysis and having all the relevant information.

### Exclusion criteria

Case sheet of CKD patients with incomplete information.

## RESULTS

Of the total 473 patients included in the study, 315 (67%) were males and 158 (33%) were females. The youngest patient was 14 years old and the eldest was 75 years of age. The mean age was  $45.49 \pm 11.78$  years. Majority of the patients (245) were in the age group of 41-60 years (Table 1).

**Table 1: Socio demographic profile of the patients.**

Socio demographic profile		Number	Total	%
Age group (years)		Female	Male	
≤20		4	6	10 2.2
21-40		64	102	166 35.1
41-60		77	168	245 51.8
>60		13	39	52 10.9
Total		158	315	473 100
Religion				
		Hindu	416	88
		Muslims	33	7
		Sikh	19	4
		Christians	5	1
Education				
		Graduate	81	17
		Intermediate	246	52
		High school	113	24
		Middle school	33	7
Occupation				
		Skilled labour	156	33
		Unskilled labour	113	24
		Unemployment	204	43

Majority of patients were Hindu by religion 414 (88%) followed by 7% Muslims, 4% Sikh and less than 1% Christians (Table 1).

Most of the patients (52%) had studied till Intermediate level of education system followed by high school 24%, Most of patients were unemployed (42.5%) followed by skilled labor 33% (Table 1).

The most common etiology of CKD as per the patients' record, found in our study was hypertension which was seen in 284 patients (60%) followed by DM (12%) as in (Table 2).

Most of the patients had negative viral markers (439) 93% i.e. they were negative for HIV, HBsAg, and HCV whereas 7% were positive for one or more of the viral markers.

Most of the patients, around 70% were undergoing maintenance hemodialysis (MHD) as a long term therapeutic modality after 2-5 years of acquiring CKD (Table 2). Majority (58%) of the CKD patients were undergoing maintenance hemodialysis three times a week (Table 2). Patients had to get atrio ventricular fistula

(AVF) surgery done in order to get their hemodialysis. Majority that is 85% patients got AVF made once but

15% patients had to get it multiple times due to failure of one or more of AV fistula (Table 2).

**Table 2: Clinical profile of the patients.**

Clinical profile		Frequency	Percentage (%)
<b>Etiology</b>	Hypertension	284	60
	DM	59	12.5
	PCKD	40	8.5
	ARF	30	6.5
	Uropathy	10	2.0
	Unknown	50	10.5
<b>Viral marker status (HIV, HCV, HbsAg)</b>	Negative	439	93
	Positive	34	7
<b>Duration of hemodialysis (in years)</b>	<1	58	12.3
	1-5	330	69.8
	6-10	73	15.4
	≥11	12	2.5
<b>Frequency of MHD/week</b>	2	195	41.2
	3	276	58.4
	4	2	0.4
<b>Frequency of arterio venous (AV) fistula surgery</b>	1	402	85.0
	2	51	10.8
	≥3	20	4.2
<b>Number of blood transfusion till date</b>	Nil	123	26.0
	1-5	289	61.1
	6-10	50	10.6
	≥11	11	2.3

**Table 3: Profile of the CKD patients with etiology of CKD.**

Characteristics	ARF	DM	HTN	PCKD	Uropathy	Unknown	Total	P value
<b>Age (years)</b>								
≤20	1	1	7	0	0	1	10	
21-40	9	21	98	15	3	20	166	
41-60	17	24	151	22	7	24	245	0.585
<60	3	13	28	3	0	5	52	
<b>Education</b>								
Graduate	8	12	51	3	0	7	81	
High school	10	12	67	12	1	12	114	
Intermediate	12	32	146	22	8	26	246	0.465
Middle	0	3	20	3	1	5	32	
<b>Occupation</b>								
Skilled labour	10	19	102	12	12	2	157	
Unskilled labour	10	11	63	14	11	6	115	0.083
Unemployed	10	29	119	14	27	2	201	
<b>Gender</b>								
Female	7	22	96	10	2	21	158	
Male	23	37	188	30	8	29	315	0.355

Patients in their last stage of CKD on hemodialysis require blood transfusions (BT). Only 26% patients did not require any blood transfusion whereas majority (61%) of patient's required 1-5 blood transfusions (Table 2).

Etiology of the CKD was compared with age of the patient, education, occupation and gender which were not found to be significant (Table 3).

**Table 4: Profile of the patients with duration of CKD.**

Characteristics	0-5 years	6-10 years	10-15 years	≥16 years	Total	P value
<b>Age (years)</b>						
≤20	8	2	0	0	10	
21-40	111	42	9	4	166	
41-60	186	45	9	5	245	0.840
<60	38	11	2	1	52	
<b>MHD/Week</b>						
2	143	41	7	4	195	
3	198	59	13	6	276	0.979
≥3	2	0	0	0	2	
<b>No. of AVF</b>						
1	302	80	10	10	402	
2	31	20	0	0	51	0.000
≥3	10	0	10	0	20	

**Table 5: Profile of patients with duration of maintenance hemodialysis (MHD).**

Characteristics	≤1 year	2- 5 years	6-10 years	≥11 years	Total	P value
<b>Number of failed AVF</b>						
0	38	208	53	2	301	
1	20	112	20	10	162	0.004
2	0	10	0	0	10	
<b>Number of blood transfusions</b>						
No BT	28	70	23	2	123	
1-5	30	239	10	10	289	0.000
6-10	0	10	40	0	50	
≥11	0	11	0	0	11	
<b>Viral markers</b>						
Negative	54	308	65	11	439	
Positive	4	22	7	1	34	0.850

Duration of CKD was compared with age group of the patients, no. of maintenance hemodialysis (MHD) and number of times arterio venous fistula surgery performed. Out of which Number of AVF performed was found highly significant with duration of CKD.

Number of failed AVF and number of blood transfusions were found significant when compared with duration of MHD (Table 5).

## DISCUSSION

CKD is one of the leading causes of mortality and morbidity. The early stages of CKD which are managed by conservative methods gradually lead to the development of end stage renal disease (ESRD).

In our study, medical record of 473 patients was analysed. Out of which 315 patients were males (67%) and 158 were females (33%) with a male:female ratio of 2:1. Male gender has been recognized as an important factor in the development of CKD.<sup>7</sup> This is consistent with various studies done on the same topic.<sup>8,9</sup>

The mean age of presentation was 45 years which is consistent with the nature of chronic diseases. Similar finding were observed in other studies done at different parts of India.<sup>10,11</sup> Whereas the International data confirms that CKD is more common in people aged 65 years or older (38%) than in people aged 45-64 years (13%) or 18-44 years (7%).<sup>2</sup> Compared with the developed world, the mean age of patients requiring renal replacement therapy (RRT) in India and Pakistan is lower. Several factors seem to be responsible, including poor availability of healthcare, which delays diagnosis and leads to a loss of opportunities to institute timely preventive measures.<sup>12</sup>

The most common associated factor in our study group was hypertension in 60% of the patients, followed by DM which was 12%. Studies done by Ruggenenti et al, Cherchiglia et al observed hypertension to be the most common finding in their respective studies.<sup>3,13</sup> Some of the studies done in different parts of India shows diabetic nephropathy to be the most common cause of ESRD.<sup>7,10,11,14</sup> The difference in the etiology of CKD may be due to variation in prevalence of these non-

communicable diseases, rural/urban divide or due to difference in the ethnicity of study subjects.

In our study, a significant percentage of CKD was due to unknown etiology i.e. around 11% which is consistent with etiological diagnosis reported by Jha et al.<sup>12</sup> The unknown etiology needs to be explored by further studies by researchers so that more and more preventive and curative modalities can be adopted for an early intervention. Glomerulonephritis was found to be the most common cause of chronic kidney disease by Dharan et al.<sup>15</sup> Whereas in one study done on geriatric patients showed 38% cause of CKD was obstructive uropathy.<sup>14</sup> However, in our study 2% was due to uropathy.

Few of the patients in our study group (15%) had to get AVF multiple times. The reason for multiple AVF could be failure of AVF due to technician error, infections due to improper hygiene, due to hypotension during hemodialysis or due poor maintenance of AVF by the patients themselves.

Most of the patients in our study, 60% had history of blood transfusion at least 1-5 times during their illness. Only 23% of the patients did not required blood transfusion till the date of study. The reason for multiple blood transfusions may be due to severe anemia due to deficiency of erythropoietin secreted by kidney, which is a common sign of CKD.

In a study done in Tripura showed 5.5% of the subjects were positive for hepatitis B and 10.2% were positive for hepatitis C (16), our study also showing similar trends where in 7% of the patients were positive for one of the viral markers. The reason being multiple hospital visit for hemodialysis session or multiple blood transfusion that increases the chances of contacting the infection during these procedures.

Traditionally, health programs for prevention of chronic diseases mainly focuses on hypertension, diabetes mellitus and cardiovascular disease (CVD), however, with the increase in the prevalence of chronic kidney disease (CKD) progressing to end-stage renal disease (ESRD) and the consequent financial burden of renal replacement therapy (RRT), more and more emphasis needs to be made on early detection and referral of the patient to Nephrology unit.

Planning for the preventive health policies and allocation of more resources for the treatment of CKD/ESRD patients are pivotal to decrease the burden of CKD.

## CONCLUSION

ESRD patients in our study group were relatively young and comprised mostly men. Hypertension and diabetes were the leading cause of ESRD. Most of the patients were on hemodialysis for the past 2-5 years. Majority were undergoing hemodialysis three times a week.

Majority of the patients had A-V fistula recirculation for effective haemodialysis at least once and few of them had to get multiple times. Very few patients were positive for viral markers even though majority had history of blood transfusion. Etiology of CKD was not found significant with demographic profile. Hypertension was the most common diseases present in our CKD study group. Awareness regarding CKD needs to be increased to general public so that early symptoms and sign related to the disease can be understood and early health seeking can be encouraged. CKD prevention and delaying progression by timely interventions are important public health objectives.

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