

A PROSPECTIVE OBSERVATIONAL STUDY ON END STAGE RENAL FAILURE PATIENTS UNDERGOING HEMODIALYSIS

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ABSTRACT

Aim: The main aim of the study is to carry out a prospective observational study on End Stage Renal Failure patients undergoing hemodialysis. **Methodology:** Prospective observational study was carried over a period of six months. The study has been conducted at the nephrology Department in AWARE GLENEAGLES AWARE GLOBAL HOSPITAL, LB NAGAR. **Results:** Among the 70 patients, the males were more prone to Chronic kidney disease i.e 71% and females accounted for 29%. Age group of 61-70 (27.1%) had a highest count for undergoing hemodialysis followed by age group 51-60 (20%). The study results show that (80%) patients were not virally infected whereas (20%) patients were diagnosed with viral infections. The percentage of virally infected male was 85.7% and female was 14.2%. Among the virally infected patients Hepatitis C Virus (HCV) was found to be highest (85.7%). Hypertension (91.42%) and Anemia (82.84%) were the etiopathological factor which leads to chronic kidney disease. Among all the drugs, the use of Anti hypertensives (22.8%) was more, next being hematinic drug (14.1%). Out of 70 patients (61.5%) were found to be without comorbidities, rest (38.5%) were comorbid. **Conclusion:** From our study it has been concluded that quick and early detection of disease and providing effective drug therapy will help slow down the genesis and progression of chronic kidney disease as well steps have been taken to decrease the risk of long term complications among haemodialysis patients.

KEYWORDS: Chronic Kidney Disease, End Stage Renal Disease, Dialysis, Hypertension.

INTRODUCTION

Chronic kidney disease (CKD), is also called chronic renal insufficiency or progressive kidney disease by some, is defined as a progressive loss of function occurring over several months to years and it is characterized by the gradual replacement of normal kidney structure with parenchymal fibrosis. Kidney disease progress over time and can lead to kidney failure or End-Stage Renal Disease (ESRD).^[1]

CKD susceptibility factors include advanced age,^[2] low income or education,^[3] racial or ethnic minority status^[4] as well as reduced kidney mass,^[5] low birth weight,^[6] and family history.^[7] These factors are not directly proven to cause CKD. Novel susceptibility factors are systemic inflammation,^[8] and dyslipidemia.^[9]

The initiating factors which are specific to the underlying causes are genetically determined abnormalities in kidney development or integrity, immune complex deposition and inflammation in certain types of glomerulonephritis, or exposure to toxins in some renal tubules and interstitium diseases.

The progressive mechanism involves hyperfiltration and hypertrophy of the living nephrons, which lead to a reduction in renal mass.^[10]

Goals of therapy include

1. Implementation of regular dialysis treatment.
2. Renal transplantation if necessary.
3. Avoiding factors that might exacerbate the CKD (hypertension, hypotension, drugs which may lead to nephrotoxicity, obstruction if any)
4. The main goal in ESRD patients is to treat secondary complications.
5. Relieve symptoms.

Non-pharmacological treatment

1. Dietary protein restriction.
2. Smoking cessation.^[11,12]

Dialysis: Dialysis is a process of removal of excess water, solutes, and toxins from the blood in people whose kidneys are impaired or failed. Compared to hemodialysis, peritoneal dialysis is less efficient, in terms of solute clearance.^[13]

Pharmacological therapy

i. Diabetic nephropathy

Intensive glucose control: Strict glycemic control helps to improve diabetic management, slows the rate of decline in eGFR, and reduced proteinuria.^[14]

Anti-hypertensive therapy: Aliskiren; an oral direct renin inhibitor or spironolactone in combination with an ACE inhibitor or ARB's lower albuminuria in type 2 diabetes patients independent of blood pressure control.

ii. Fluid and electrolyte imbalance: Avoid drugs that contribute to hyperkalemia.

Polycitra or potassium citrate is the better alternative for metabolic acidosis patients.^[15]

Renal transplantation

Renal transplantation outcomes are excellent and the ultimate treatment option for ESRD patients. Complications of CKD such as anemia and bone disease are also resolved.^[16]

MATERIALS AND METHODS

Study site: The study site selected was the nephrology department at Aware Gleneagles Global Hospital, Bairamalguda, LB Nagar, Hyderabad, Telangana, India.

Study period: The study was carried out for six months.

Sample size: A total of 70 outpatients from the nephrology department in Aware Gleneagles Global Hospital, who was on dialysis and who fulfilled the

inclusion, and exclusion criteria were selected for the study.

Study approval: The study was approved by the Ethics Committee of Sree Dattha Institute of Pharmacy. Permission to accompany physicians in ward rounds and for the collection of patient data was taken from the head of the nephrology department before beginning the study.

Study criteria

Inclusion criteria

- Patients of both the genders
- Outpatients
- Hemodialysis
- Patients of age group between 16-90
- Various Co-morbid conditions

Exclusion criteria

- Inpatients
- Pregnant women
- Patients below the age group of 16
- Other types of dialysis
- HIV patients
- Patients who refused the consent

Sources of data

- Patient case notes
- Lab reports
- Patient interview
- Prescriptions of patients

Statistical analysis: SPSS IMB 20 version

RESULTS

Table 1: Gender wise distribution of dialysis subjects.

S. No	Sex	Number of subjects (N=70)	Percentage (%)
1	Male	50	71%
2	Female	20	29%

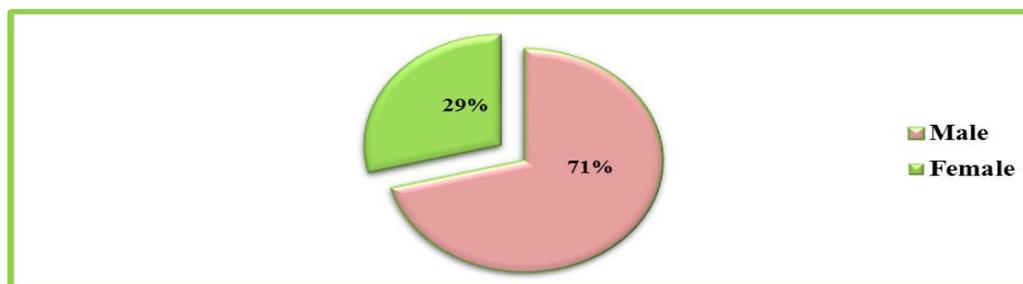


Figure 1: Pie chart presentation of gender wise distribution of dialysis.

Among the study population, 71% were males and 29% were females.

Table 2: Distribution of dialysis subjects based on viral infections.

S. No	Infected and Non-Infected	Number of subjects (n=70)	Percentage (%)
1	Infected subjects	14	20%
2	Non-Infected subjects	56	80%

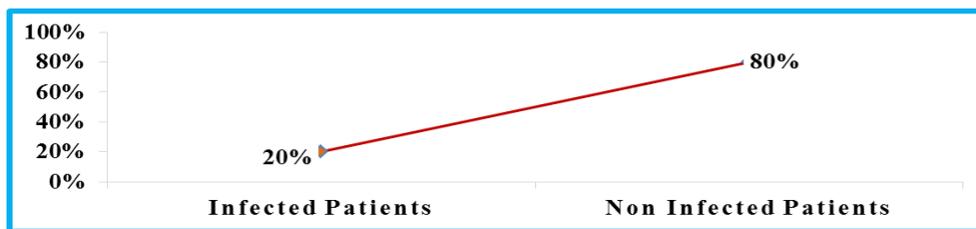


Figure 2: Line graph presentation of distribution of dialysis subjects based on infections.

Among the study population, non-infected subjects were 80% and infected subjects were 20%.

Table 3: Distribution of dialysis subjects based on age.

S. No	Age	Number of subjects (n=70)	Percentage (%)
1	20-30	11	15.7%
2	31-40	6	8.5%
3	41-50	13	18.5%
4	51-60	14	20%
5	61-70	19	27.1%
6	71-80	5	7.1%
7	81-90	2	2.8%

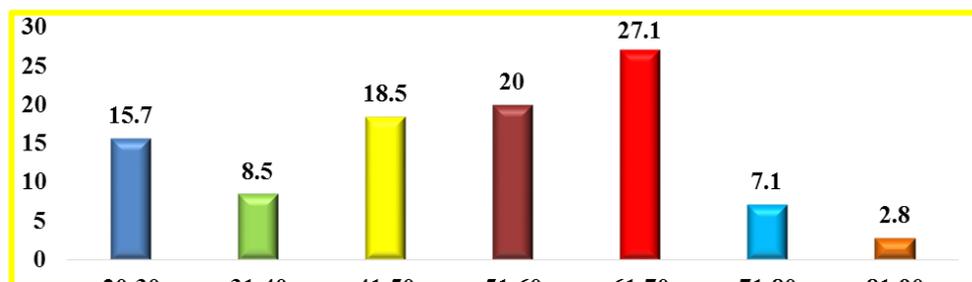


Figure 3: Column graph presentation of dialysis subjects based on age.

Among the study population, subjects between age group 61-70 (27.1%) were more in number, followed by 51-60 (20%).

Table 4: Distribution of subjects based on co-morbidities.

S. NO	subjects based on co-morbidities	No of subjects (n=70)	Percentage%
1	With Comorbidities	27	38.5
2	Without Comorbidities	43	61.4

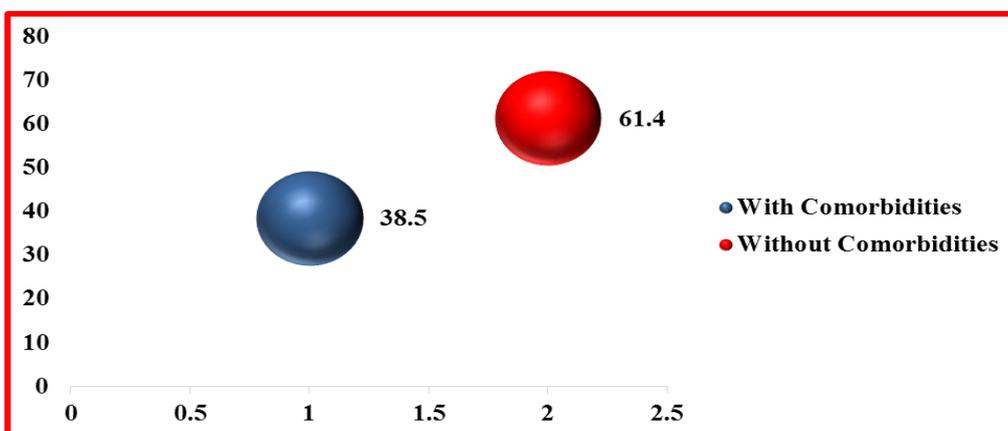


Figure 4: Scattered graph presentation of distribution of subjects based on co-morbidities.

Among the study population, 61.4% were without co-morbidities and 38.5% were with co- morbidities.

Table 5: Distribution of subjects based on use of dialyzer.

S. No	Use of dialyzer	Number of subjects (n=70)	Percentage (%)
1	Single Use	5	7.1
2	Multiple Use	65	92.8

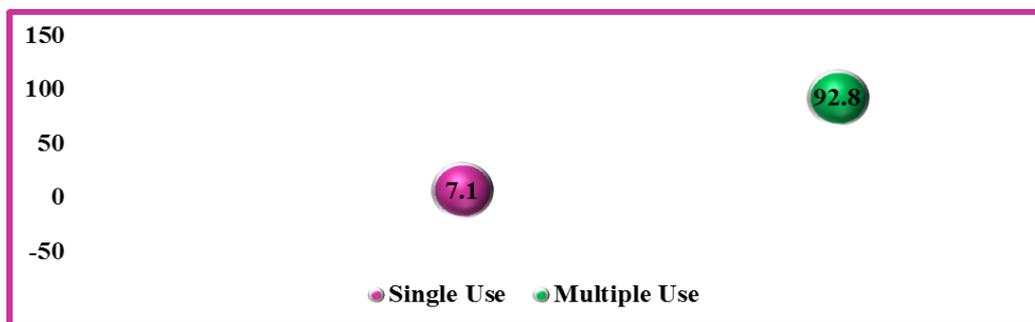


Figure 5: Scattered graph presentation of distribution of subjects based on use of dialyzer.

Among the study population, 92.8% had multiple dialyzer use and 7.1% had single dialyzer use.

Table 6: Statistical Presentation of the data of study population based on use of dialyzer.

			Use of dialyzer		Total
			Multiple use	Single use	
Age group	21-30	F	12	0	12
		%	100.0%	0.0%	100.0%
	31-40	F	4	1	5
		%	80.0%	20.0%	100.0%
	41-50	F	14	0	14
		%	100.0%	0.0%	100.0%
	51-60	F	16	0	16
		%	100.0%	0.0%	100.0%
	61-70	F	14	2	16
		%	87.5%	12.5%	100.0%
Total	> 70	F	5	2	7
		%	71.4%	28.6%	100.0%
Total		F	65	5	70
		%	92.9%	7.1%	100.0%

Table 7: Chi-Square Tests of the data of study population based on use of dialyzer by Column Statistics.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.015 ^a	5	.075

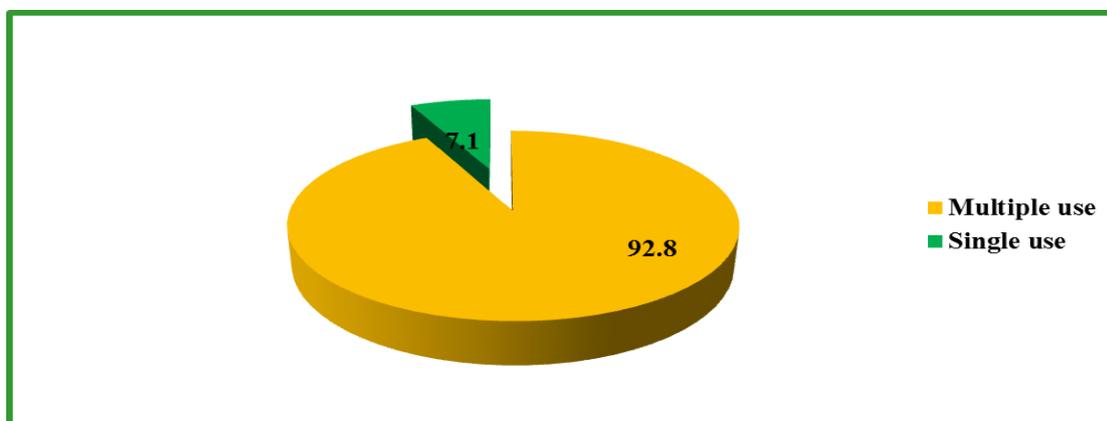


Figure 6: Pie chart distribution in Cross Tabular form of subjects based on use of dialyzer by Column Statistics.

Among the the study population, 92.8% had multiple dialyzer use and 7.1% had single dialyzer use.

DISCUSSION

According to the study conducted by Vinod Kumar Jha et al (2018), 76.1% were found to be male and 23.9% were female with a ratio of 3.2:1 during their study period.^[17] In our study, the male were found to be 71% and the female were 29% with a ratio of 5:2.

In the same study conducted out of all the etiological features in all the patients diabetes mellitus was seen in (36.9%). 64.6% of patients have high blood pressure, but in our study carried out of all the etiological features hypertension was observed in 64 (91.42%), anemia 58 (82.85%) and diabetic nephropathy in 31 (44.28%) patients.

In the study conducted by Sidra Sattaie et al (2016) Diabetes mellitus was a co-morbid condition for 148 (98.7%) patients, hypertension for 139 (92.7%), and cardiac diseases for 40 (26.7%).^[18] but Hypertension was identified as a co-morbid condition for 64 (91.42%) patients and diabetes mellitus for 31 (44.28%) patients.

In the same study carried out cramps were seen in 22/150 i.e, 14.7%, headache in 21/150 i.e, 14%, and neurological disorders in 16/150 i.e, 10.7%. Post-dialysis complications were common in traditional and diabetic patients. In our study among 70 patients, cramps were observed in 27 i.e, 38.5%, headache was seen in 8 patients i.e, 11.4% and neurological disorders was seen in 2 patients i.e, 2.8% during or after hemodialysis. Episodes of hypotension were observed in 16 patient's i.e, 22.8%, and in very few cases hypertension was noted i.e 3 patients (4.2%) during haemodialysis.

In the same study conducted, out of 150 patients, 114 (76%) were on hemodialysis thrice a week, 31 (20.7%) twice a week, and 5 (3.3%) once a week. In our study, 42.8% i.e, 30 patients were on hemodialysis thrice a week, 48.5% i.e, 34 patients twice a week, and in 8.5% i.e, 6 patients were irregular to hemodialysis sessions.

In our study among 70 patients, 14 were found to be infected i.e, 20%. Out of 14 patients, 12 were male and 2 were female. 12 out of 14 patients were tested positive for HCV; one patient had a dual infection of HCV + HBV, and another patient with HCV + HBsAg.

In a previous study conducted by Kranthi Kosaraju et al. (2013), 2.63% were found to be infected. Among these, 26 patients were positive for HBV, 19 patients were positive for HCV, and 2 were positive for both HCV and HBV virally infections.^[19]

According to our study, 12/70 patients were suffering from pruritus which accounts for 17.1%. As per the study conducted by Maryam Akhyani et al. (2005), 167

patients were on maintenance hemodialysis among them Pruritus was found in 70/167 patients i.e, 41.9%.^[20]

As per the previous study conducted by Iliza Idre et al the prevalence of anemia was 31.7% i.e., 256/808 patients.^[21] In our study the occurrence of anemia was 82.85% i.e., 58/70 patients.

In the study carried out by Andrew D. Rule et al (2011) out of 1391 patients 45 (3.2%) patients were kidney formers^[22], whereas in our study conducted out of 70 patients 8 (11.5%) patients had kidney stone formation.

CONCLUSION

From our study it has been concluded that quick and early detection of disease and providing effective drug therapy will help slow down the genesis and progression of chronic kidney disease as well steps have been taken to decrease the risk of long term complications among haemodialysis patients.

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