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A Descriptive Study On Chronic Kidney Disease Patients Undergoing Hemodialysis In A Tertiary Hospital

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Abstract: In recent years, kidney-related health issues have emerged as a significant public health concern globally. The majority of patients with chronic kidney disease (CKD) require hemodialysis therapy to manage their condition. However, despite undergoing treatment, these patients often experience various health problems. This study aimed to assess the status of CKD patients undergoing hemodialysis at a tertiary hospital. A descriptive study among 42 CKD patients carried out over a period from December, 2023 to February, 2024 in hemodialysis unit of medicine department. Patients more than 20 years and above and receiving hemodialysis more than six months included in the study. Descriptive analysis was done using IBM SPSS, Version 27.

Findings among 42 patients, almost half 19(45%) belongs to the middle age group (40-59) years. The range age was 23 to 74 with mean (SD) 46.71(±13.23) years. Regarding hemodialysis, period was from 1 year to 12 years. Most of the patients 34(81%) underwent for up to 5 years. Pre-hemodialysis sign and symptoms were found as most of the patients 32(76%) and 32(76%) experienced weakness and swelling respectively followed by anorexia 30(71%), headache 27(64%), nausea 24 (57%), shortness of breath /breathlessness 24 (57%), heaviness/fluid overload 23(55%), restlessness 23(55%). Similarly, the few patients experienced the features like vomiting 6(14%) followed by fever 5(12%), cough 5(12%). In this study, the majority of patients were under the age of 60, indicating that adults in the working-age group are significantly affected by chronic kidney disease (CKD) and were undergoing hemodialysis. Hypertension was identified as the leading cause of CKD. Common signs and symptoms experienced by patients included weakness, swelling, anorexia, headache, nausea, breathlessness, fluid overload, and restlessness. It is essential to implement health screening programs, along with education and counseling to target group to prevent worsening the kidney disease among at-risk populations.

Index Terms **-** Chronic kidney disease, descriptive, hemodialysis, tertiary hospital.

I. INTRODUCTION

CKD is defined as glomeration filtration rate is less than sixty milliliter per minute (<60 ml/min) more than three months (>3mo) or kidney damage more than three months (Levey et al. 2013). Whether it is acute or chronic, kidney dysfunction can cause significant diseases and death too. Some people with chronic kidney disease (CKD) experience progressively worsening renal failure and need expensive treatment, such as dialysis, transplantation, or both. People with CKD exit high risks for fractures, anemia, and cardiovascular events (Prabhakaran et al. 2017). Globally, 956000 deaths are caused by chronic kidney diseases (CKD) every year (Stalin et al. 2020).

There is 102 people per million are predicted to acquire ESRD annually in South Asia. And that is caused by diabetes and similarly 105 per million due to hypertension. Since there is presently no renal patient record, incidence is estimated using global and South Asian (specifically Indian) predictions. There are 100 to 200 cases of ESRD per million people in India (Tadesse et al. 2021). The prevalence of CKD is 10.2% in India, 10.6% in Nepal, 17.3% in Bangladesh, and 23.3% in Pakistan (Hasan et al. 2018). In Nepal, there is scarce of research study on the chronic disease and hemodialysis. The severity and depth of this public health issue emphasize the necessity of conducting research on a variety of aspects related to this illness and its treatment. So, researcher is interested to assess the status of chronic kidney disease patients undergoing hemodialysis in a tertiary hospital of Nepal.

Objectives of the study

To identify the socio-demographic characteristics of CKD patients

To assess the comorbidities of the CKD patients treated with hemodialysis

To assess the pre hemodialysis sign and symptoms experienced by CKD patients

2. METHODOLOGY

This was a descriptive study conducted among 42 CKD patients undergoing hemodialysis at Bir-Hospital, Kathmandu, Nepal. Data collection was done from December, 2023 to February, 2024 after receiving ethical clearance from the Institutional Review Board (Reference number: 540), Bir-Hospital/ National Academy of Medical Sciences (NAMS) and Nepal Health Research Council (NHRC) (Reference number: 171), Kathmandu. Nepal. Convenience sampling method was used and included patients with CKD and aged 20 years and more, who were on maintenance hemodialysis for six months or more and either twice or thrice a week on an outpatient basis. Patients were having acute kidney disease, dementia and critically ill were excluded. The socio-demographic information, details of hemodialysis therapy of CKD patients were reviewed from patients' medical charts and hemodialysis record sheet. Experienced pre-hemodialysis sign and symptoms were asked with yes or no options using hemodialysis record sheet. The statistical software IBM SPSS statistic version 27 was used for data analysis. In which frequency and percentage were calculated for binary data and mean with standard deviation was used for continuous data.

3. RESULTS

Among all 42 patients, range age is 23 to 74 years with mean (SD) 46.71(±13.23) years. Almost half of the patients 19(45%) belongs to the middle age group (40-59) years followed by 7 (17%) comprises as senior citizens (60 and above) years. Twenty-seven (64%) are male and 30(71%) patients stay in rented home. Similarly, 38(90%) are married and majority 30(71%) belongs Hindu religion and 33(79%) were as nuclear family. Regarding education level, fifteen (36%) were illiterate and only 5(12%) had University level education and 37(88%) were dependent on their family after starting the treatment (table 1).

Table 1. Socio-demographic Characteristics of CKD Patients (n=42).

Characteristics		(n)	(%)
Age in years	20-39	16	38
	40-59	19	45
	60 and above	7	17
	Mean (SD) = 46.71(±13.23), Range age: 23-74.		
Gender	Male	27	64
	Female	15	36
Residence	Rented home	30	71
	Own home	12	29
Marital status	Married	38	90
	Unmarried	4	10
Educational level	Illiterate	15	36
	Up to 5 class	4	9
	6-10 class	10	24
	11-12 class	8	19
	Bachelor/Master level	5	12
Occupation	Dependent	37	88
	Small business	3	7
	Job in private office	2	5
Religion	Hindu	30	71
	Buddhist	7	17
	Christian	3	7
	Islam	2	5
Family type	Nuclear	33	79
	Joint	9	21

Table 2 depicts majority of the patients had arteriovenous fistula at right hand, regarding hemodialysis, range period is from one year to 12 years. Most of the patients 34(81%) underwent for up to 5 years and few 5(12%) received for more than 10 years. The most of the patients 38(90%) received hemodialysis 2 sessions(twice) per week. Similarly, more than half 26(62%) received erythropoietin in regular basis. Furthermore, all patients had negative viral markers 42(100%). They were negative for HIV, HCV and HbsAg.

Table 2. Baseline Clinical Profile of CKD Patients (n=42).

Characteristics		n	%
Site of Arteriovenous Fistula	Right hand	33	79
	Left hand	9	21
Period of hemodialysis(year)	1-5	34	81
	6-10	3	7
	>10	5	12
Frequency of hemodialysis session (week)	2 times	38	90
	3 times	4	10
Use of erythropoietin	Regular	26	62
	Sometimes	16	38
Viral marker status (HIV, HCV, HbsAg)	Negative	42	100

Table 3 shows, most of the patients 32(76%) and 32(76%) experienced weakness and swelling respectively followed by anorexia in 30(71%), headache 27(64%), nausea 24 (57%), shortness of breath 24 (57%), heaviness/fluid overload 23(55%), restlessness 23(55%). Furthermore, the few patients experienced the features like vomiting in 6(14%) followed by fever 5(12%), cough 5(12%).

Table 3. Pre- hemodialysis Sign and Symptoms experienced by CKD Patients (n=42).

Clinical Features	(n)	(%)
Weakness	32	76
Swelling	32	76
Anorexia	30	71
Headache	27	64
Nausea	24	57
Shortness of breath/Breathlessness	24	57
Heaviness/ fluid overload	23	55
Restlessness	23	55
Itching	21	50
Sleeplessness	19	45
Flank pain	9	21
Vomiting	6	14
Fever	5	12
Cough	5	12

Regarding comorbidities, almost half of the CKD patients 20(48%) had hypertension, few 5 (12%) had both hypertension and diabetes mellitus. Seventeen (40%) had cardiac, kidney and thyroid disease shown in figure 1.

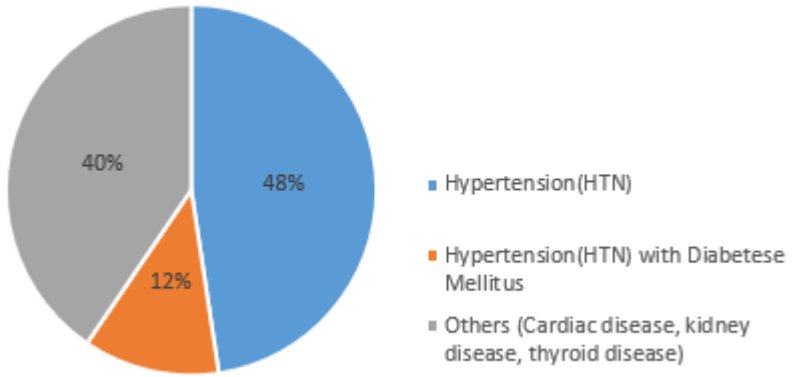

Figure 1. Comorbidities of CKD Patients undergoing Hemodialysis (n=42).

4. DISCUSSION

The study recruited a total of 42 CKD patients undergoing hemodialysis. The range age was 23 to 74 years with mean (SD) 46.71(±13.23) years. The average age was 48.5 years and almost half of the respondents19(45%) belonged to the middle age group (40-59) years. These findings are aligned with the study done in Nepal and India mentioned as the mean age of the patients was 45.75 ±15.20 (Mandal et al. 2023). The range age was from 14 -75 years with mean age was 45.49±11.78 years and majority of the patients 245(52%) were in the age group of 41-60 years (Kumar 2021).

In this study findings, the most of the patients 38(90%) received hemodialysis two times per week. This is consistent with study done in other setting of Nepal revealed 83 (86.45%) end stage renal disease patients were on maintenance dialysis for twice a week (Rajbhandari et al. 2022). But this finding was contrast with the findings of study done in India where the majority of the patients 305 (60.64%) undergo thrice weekly dialysis (Ravindran et al. 2020).

In present study, more than half 26(62%) of the patients received erythropoietin in regular basis. This finding is relevant to study done by Mandal et al. (2023), found the most of the patients 36(90%) had used erythropoietin regularly. Furthermore, study findings revealed, all patients had negative viral markers as in 42(100%). They were negative for HIV, HCV and HbsAg. This finding is congruent with the findings of study

done in India reported 439(93%) patients had Sero negative for viral marker (i.e. HbsAg, HCV, HIV I and II) (Kumar, 2021).

Regarding sign and symptoms that experienced by CKD patients before starting hemodialysis therapy, the most of the patients 32(76%) had weakness and 32(76%) had swelling respectively followed by anorexia 30(71%), headache 27(64%), nausea 24 (57%), shortness of breath /breathlessness 24 (57%), heaviness/fluid overload 23(55%), restlessness 23(55%). Similarly, the few patients experienced the features like vomiting 6(14%) followed by fever 5(12%), cough 5(12%). Similar study done by Chaudhari et al. (2017), mentioned as manifestations occurred breathlessness 40(80%), anorexia 34(68%), muscle weakness 33(66%), pedal oedema 25(50%), fluid overload 25(50%), vomiting 19(38%) and flank pain 4(8%) respectively. The similar type of study done in Nepal found manifestations like anorexia (55%), dryness of skin and pruritus (52.5%), nausea/vomiting (45%), muscle weakness (42.5%), breathlessness (35%) and pedal edema (30%) (Mandal et al. 2023).

In this study findings regarding comorbidities, showed almost half of the CKD patients 20(48%) had hypertension, few 5 (12%) had both hypertension and diabetes mellitus. Seventeen (40%) had cardiac, kidney and thyroid disease. Similar findings are found in different studies done in different settings of the Nepal like 54% and 90% patients had hypertension respectively {Chhetri et al. (2008) & Mandal et al. (2023)}. One study from India also showed hypertension is the most common causes of CKD, reported as hypertension (HTN) in 290 patients (58%), diabetes mellitus (DM) in 65 patients (13%), polycystic kidney disease (PCKD) in 45 patients (9%), acute renal failure (ARF) in 35 patients (7%), uropathy in 12 patients (2.4%), and an unknown cause in 53 patients (10.6%) (Gejjalagere et al. 2024). But in contrast of this study findings, study from India mentioned diabetes is the most common comorbidity of CKD followed by hypertension (Chaudhari et al. 2017).

CONCLUSIONS

Chronic kidney disease (CKD) affects individuals across all age groups, from young adults to the elderly, with many requiring hemodialysis to sustain life. This study highlights a growing trend of CKD among younger, working-age individuals. Hypertension emerged as the leading cause of CKD in the study population. The most commonly reported pre-hemodialysis signs and symptoms were weakness, swelling, anorexia, and headache. These findings underscore the urgent need for early diagnosis and preventive measures to halt the progression of CKD.

Limitation of the study

The study was conducted at a single tertiary care center and involved a small sample size. As a simple descriptive study, its findings may not be generalizable to a broader population.

Conflict of interest: None

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