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Original Research Article

A Study on Clinical Profile of End Stage Renal Disease in Patients Undergoing Hemodialysis – A Descriptive Cross Sectional Study

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Conflict of interest: Nil

Abstract

Background: End-stage kidney disease is increasing worldwide, primarily in the developing countries. It is affecting mainly the productive age group. We therefore sought to describe the clinical and epidemiological characteristics of hemodialysis patients.

Aims and Objective: To identify the socio-demographic characteristics, comorbidities and clinical profile of patients treated with hemodialysis.

Material and Methods: This was a descriptive, cross-sectional study conducted among 40CKD patients undergoing hemodialysis at I.Q City medical college and Hospital, Durgapur, West Bengal. The study was based on the patients' attending Hemodialysis Unit in between April 2025 to March 2026. The ethical clearance for the research was taken. 40 patients were retrieved and data was collected according to Performa. Socio demographic profiles including age, sex and clinical data including etiology, duration of CKD, duration of hemodialysis and laboratory parameters including hemogram and renal function test were recorded. Patients more than 20 years and above and receiving hemodialysis more than six months included in the study.

Results: Among all 40 patients, range age is 24 to 66 years with mean (SD) 45.46(±12.32) years. Almost half of the patients 20(50%) belongs to the middle age group (36-56) years followed by 10(25%) comprises as senior citizens (60 and above) years. Twenty-six (65%) are male and 14(35%) patients are female. Similarly, 27(67.5%) are married and majority 32(80%) belongs to Hindu community. 33(82.5%) were as nuclear family. Regarding education level, eighteen (45%) were illiterate and only 3(7.5%) had University level education and 36(90%) were dependent on their family after starting the treatment.

Conclusion: Hypertension and diabetes were the leading cause of End stage renal disease in most of the patients. Early diagnosis, treatment and proper follow up of the risk factors will be the key to prevent progression of chronic kidney disease into the end stage requiring hemodialysis or Renal Transplant.

Keywords: Chronic kidney disease, hemodialysis and end stage kidney disease.

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Introduction

Chronic Kidney Disease (CKD) is a major public health problem worldwide, with a significant burden of morbidity and mortality. It is now recognized as a major public health problem in India and nearby countries like Nepal [1]. CKD, called end-stage renal disease (ESRD) refers to the kidneys' inability to maintain homeostasis and requires patients to rely on a renal replacement therapy (RRT). Hemodialysis continues to be the predominant RRT modality in developing country [2]. CKD is also associated with substantial morbidity, mortality and healthcare costs. Although it is largely preventable, over 9% of the population worldwide is estimated to be affected by the condition, particularly developing countries and it is associated with diabetes type II, hypertension and obesity which are also growing at an alarming rate [3]. An eGFR level of less than 15 mL/min/1.73 m2 was defined as the final stage of CKD [2]. The present study was conducted to find out the demographic, clinical and etiological profile of the CKD patients on hemodialysis attending to a tertiary care hospital in I.Q City Medical College and Hospital, Durgapur, West Bengal.CKD is

defined as glomeration filtration rate is less than sixty milliliter per minute or kidney damage more than three months, 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. Globally, 9,56,000 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 I.Q City, Durgapur.

Aim and Objectives

To identify the socio-demographic characteristics, comorbidities and clinical profile of patients of end stage renal disease undergoing hemodialysis.

Material and Methods

This cross-sectional study was conducted in the Department of General Medicine at I.Q City Medical College and hospital, Durgapur, West Bengal after obtaining the clearance from the institutional ethical committee of the college. The study included 40 patients diagnosed withpatients' attending Hemodialysis Unit in between April 2025 to March 2026.

Convenience sampling method was used and included patients with CKD and aged 20 years and more, who were on maintenance hemodialysis from six months to one year, 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.

Study Period: April 2025 to March 2026

Inclusion and exclusion criteria

Statistical analysis: It was performed using SPSS version 20.0. The significance level was set at $p < 0.05$.Data were entered into Statistical Package for the Social Sciences 21 and descriptive analysis was done and expressed as percentages, ratios and mean values.

Results

Among all 40 patients, range age is 24 to 66 years with mean (SD) 45.46(±12.32) years. Almost half of the patients 20(50%) belongs to the middle age group (36-56) years followed by 10(25%) comprises as senior citizens (60 and above) years. Twenty-six (65%) are male and 14(35%) patients are female. Similarly, 27(67.5%) are married and majority 32(80%) belongs to Hindu community. 33(82.5%) were as nuclear family. Regarding education level, eighteen (45%) were illiterate and only 3(7.5%) had University level education and 36(90%) were dependent on their family after starting the treatment. Table 2 depicts majority of the patients had arteriovenous fistula at right hand, regarding hemodialysis, for a period of one year.

Table 1: Baseline Clinical Profile of CKD Patients (n=40)

Characteristics		N	%
Site of Arteriovenous Fistula	Right hand	28	70
	Left hand	12	30
Period of hemodialysis(year)	1-4	30	75
	5-8	04	10
	>8	06	15
Frequency of hemodialysis session (week)	2 times	35	88
	3 times	05	13
Use of erythropoietin	Regular	27	68
	sometimes	13	33
Viral marker status (HIV, HCV, HbsAg)	Negative	40	100

Most of the patients 32(80%) underwent for up to 3 years and few 4(10%) received for more than 5 years. Most of the patients 37(92.5%) received hemodialysis 2 sessions(twice) per week. Similarly,

more than half 26(65%) received erythropoietin in regular basis. Furthermore, all patients had negative viral markers 40(100%). They were negative for HIV, HCV and HbsAg.

Discussion

The finding was similar to various studies from Nepal, India and Cameroon [4,8]. Out of 40, 26 were male and 14 females with M:F nearly 1.5: 1 ratio which was similar to study done at Pokhara [4] and Kathmandu [5]. It is similar with the study from India and Cameroon [6,7]. Mean age was 45.75 and most of the patients were in between 30 to 60 age group. The age group 20 to 60 is the most productive age group which affects the economy of the country. Country should bring public health programmes for prevention of CKD and to delay progression to ESRD and replacement therapy. Age of progression of CKD in different States of the United States was above 62 years [4]. Developing countries have lower age due to lack of proper health facilities, poverty and untimely follow up. Most of the people had hypertension followed by diabetes as a cause of CKD. Hypertensive nephropathy has been a major cause of CKD in study from India [6,9] Diabetes nephropathy has been major cause in studies [4,10,11]. Other causes were CGN and obstructive uropathy. CKD is diagnosed at later stages. Due to uncontrolled diabetes and hypertension the people land up in CKD. Lack of regular health checkup and screening of hypertension and diabetes may be the region for later presentation. Hemodialysis is free of cost in Nepal at various Government centers throughout the country. More and more patients who previously couldn't afford hemodialysis are getting this service. Most of the patients had anemia which is similar with the studies from Pokhara and Kathmandu [4,5].

Another study from Bangalore India also had anemia in most of the patients [6]. Lower hemoglobin may result from the loss of erythropoietin synthesis in the kidneys and or the presence of inhibitors of erythropoiesis [12]. However, due to cost issues, patients can't afford erythropoietin analogues therapy regularly. Most patients rely more on blood transfusion for anaemia correction. Hypernatremia has been found in more than half of the cases. This may be due to salt restriction and overuse of diuretics. This finding is inconsistent with another study [4]. Hyperkalemia was seen in one fifth of cases; this may be possibly due to dependence on blood transfusion for correction of anaemia [4]. Hypocalcaemia was also a common finding in the patients. It needs to be corrected through medical supplements and diet. Low economic status may have played a role.

Conclusion

Hypertension, diabetesand diabetic nephropathy were the leading cause of End stage renal disease in most of the patients in our study. Cause of ESRD could not be ascertained in nearly half of the total patients. Early diagnosis, treatment and proper follow up of the risk factors will be the key to prevent progression of chronic kidney disease in to the end stage requiring hemodialysis or Renal Transplant.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. 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.

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