

ORIGINAL ARTICLE

OUTCOMES OF DIALYSIS IN LOW INCOME COUNTRY – AN EXPERIENCE IN A TERTIARY CARE CENTER OF BANGLADESH

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Abstract:

Background: The widespread use of hemodialysis to prolong life of end-stage renal disease (ESRD) patients has been a remarkable achievement, preventing death from uremia in these patients. The aim of the study was to find out the outcomes of haemodialysis patients with end-stage renal disease (ESRD) in low Income County. **Methods:** A hospital based prospective observational study was performed in the of Department of Nephrology, Shaheed Suhrawardy Medical College. Total 189 patients who stated dialysis during study period were included. All patients were monthly followed up and appropriate investigation done. All data recorded in a case record form. Study protocol approved by Ethical committee of institute. Data analyzed in SPSS software version 25. **Results:** Among 189 ESRD patients on MHD selected with mean age 49.16 years (15-82), male was 60.3% and female 39.7%. Eighty eight 46.5% patient died and 39.15%(74) patient discontinued dialysis due to lack of financial support or helping assistant or social support. Three (1.6%) patients underwent renal transplantation and five patients (2.6%) transfer to other dialysis center. Average life span in dialysis 256 day (16-786 days). Most of the patients was on twice weekly dialysis 84%. Vascular access of stating dialysis was 73.8% by catheter and only 32.2% stated with AV fistula. **Conclusion:** A large group of patients leave dialysis due to financial or helping personal or social support within 3-4 months of stating dialysis. A significant number of patients died due to multiple risk factors within 8-9 months. Identification of risk factors for early mortality is essential and appropriate measure should take to prevent discontinuation at community and national level.

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Introduction:

Kidney Diseases contributes a significant proportion to the global burden of Non-Communicable Diseases (NCDs) and increasing along with other non-communicable disease like Diabetes, hypertension, cardiovascular disease especially in developing countries¹. 1.75 million Patients worldwide received

dialysis, of which 1.55 million (89%) were on hemodialysis (HD), nearly 62% of the HD patients were being treated in high-income countries and the remaining 38% in low- and middle-income countries². 2.284 million people might have died prematurely because renal replacement therapy (RRT) could not be accessed. The largest treatment gaps were noted

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in low-income countries particularly Asia and Africa that clearly indicating that the costs are beyond the capability of the average individual. Challenges encountered were late presentation, co-morbid conditions, location of the renal care centers, and inability to pay for the recommended adequate dialysis owing to high cost³. In addition, low resource setting renal transplantation facilities are limited and dialysis costlier than patient economic status. Maintain of dialysis quality and infection control also a big challenge.

Methods:

This was prospective observational study done in dialysis unit of Shaheed Suhrawardy Medical college hospital, Dhaka, Bangladesh during January 2018 to Jun 2019.

The aims of the study : To find out the outcomes of hemodialysis in our country Bangladesh.

Methods:

A hospital based prospective observational study was performed in the of Department of Nephrology, Shaheed Suhrawardy Medical College. All ESRD patients on maintenances hemodialysis during the period one year (January 2018 to June 2019) included in the study. Acute kidney injury patients were excluded. At the start of the study, the patients were clinically evaluated, and appropriate investigations were done. Regular follow-up was done every month during study periods to identify the cases of death, transplant, and transfer to peritoneal dialysis or discontinue. Data regarding demographic characteristics, chronic kidney disease and medical history, dialysis, and medical prescriptions, as well as laboratory data, was recoded. All data will be recorded in case report form(CRF). Data analyzed in SPSS software version 25. All data presented with mean, percentage and range. Compare between groups was done by students t test for categorical variable or x2 test for non-categorical variable. In all cases P value less than 0.05 counted as significant.

Results:

One hundred and eighty nine ESRD patients included in our study. Mean age 49.28 years and male 114 (60.3%). Causes of CKD include diabetes 76(40.2%), Hypertension 50(26.5%), ADPKD 3(1.6%), glomerulonephritis 44(23.3%) and unknown 16(8.4%). Vascular access at initiating dialysis was emergency catheter 138 (73.8%) and arteriovenous fistula only 61 (32.2%) cases. Jugular catheter used in 91(48.1%),

femoral catheter used 23(12.2%) and 14(7.4%) were use tunnel catheter. Vascular access complications found in 38(20.1%) cases, including catheter related complication were seen in 29(15.3%) cases and 21(11.1%) fistula related complications. During study periods 96(50.8%) required hospitalization for acute complications. Seventy four patients (39.15%) discontinue dialysis within 116 days of stating dialysis. Causes of discontinuation included inability to bear cost of dialysis 25.5%(48), lack of family assistance 6.9% (13) , lack of transport facility 6.9%(13). Renal transplantation done only 1.6%(3) and 5(2.6%) patient transfer other institute. Eighty eight (46.5%) patients died in within 26 months of dialysis. Mean duration of dialysis 256(16-786) days and 19(10.1%) patients continue dialysis more than 26 months,

Baseline characteristics of study population were mean age 49.28 years(15-82) and 60.3% were male(Fig-1), most common causes of ESRD were Diabetes, hypertension and glomerulonephritis. Most of patients stated dialysis with temporary vascular access, about 39 % patient discontinue dialysis prematurely (Table I).

Table-I
Baseline Characteristic of study populations

	Number/	Percentage/
	Mean	range
Age	49.28	15-82
Male	114	60.3
Female	75	39.7
DM	76	40.2
HTN	50	26.5
ADPKD/HDN	3	1.6
Glomerulonephritis	44	23.3
unknown	16	8.4
Stat with fistula	61	32.2
Stat with temporary vascular access	138	73.8
Hospitalization	96	50.8
Death	88	46.6
Discontinue	74	39.15
Transplantation	3	1.6 4
Vascular access complications	38	20.1

Gender distributions of study populations (Fig.-1).

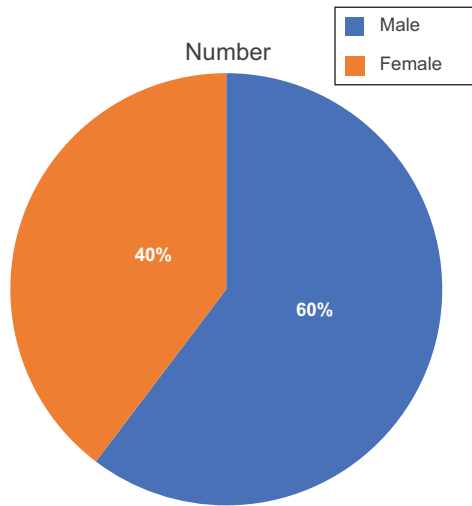


Fig.-1: Sex distribution of study populations

Vascular access is important for dialysis outcome. Most of patients stated dialysis with temporary vascular access (femoral and jugular catheter). Only 32% patient stated with AV fistula (Fig 2).

Vascular Access in Hemodialysis

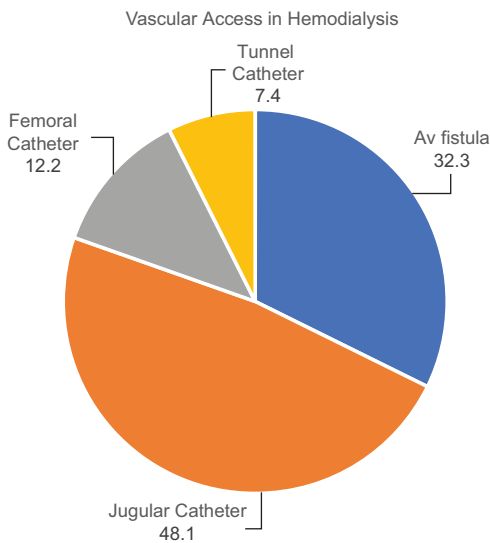


Fig.-2: Vascular Access in Hemodialysis

Causes of ESRD who underwent hemodialysis included Diabetes, hypertension and glomerulonephritis. 8.4% were unknown etiology (Fig 3).

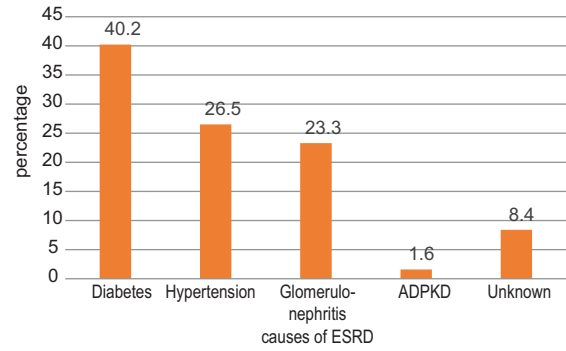


Fig.-3: Causes of ESRD

We found 46.5% patients died within 786 days. A large group of patients discontinue dialysis prematurely and a few patients can transform into renal transplantation (Fig-4). Causes of discontinuation were lack affordability, lack of family assistance/support or lack of transport facility (Fig 5).

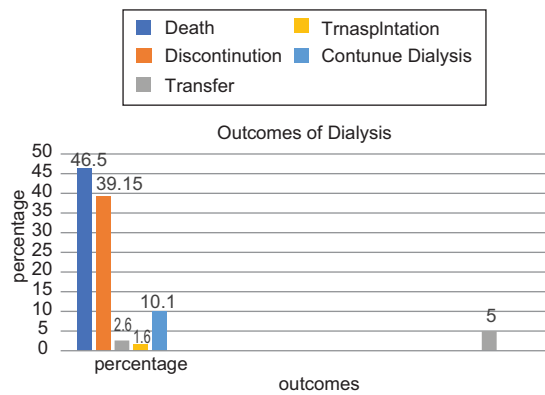


Fig.-4 : Outcomes of Hemodialysis

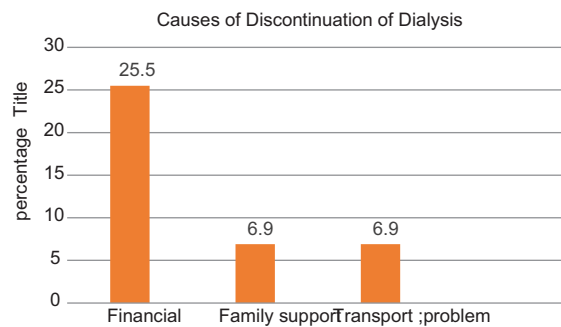


Fig.-5: Causes of Discontinuation of Hemodialysis

Discussion:

In our study among 189 patients with mean age 49.5 years and 60.28% male. Most common causes near of ESRD were diabetes, hypertension, glomerulonephritis, and others. Initiation hemodialysis was

with mostly temporary vascular catheter and Only 32.2% were stated with AV fistula. About 40% of patients discontinued dialysis within 116 days of starting dialysis. Only 1.6% shifted to renal transplantation.

In our study high dropout and poor survival of our patient was far below standard of US or Europe. US renal data system report, the expected life span of hemodialysis approximately 10.5 years¹⁶. But it is better than Africa where only 10% of African adult continue dialysis >3 months¹⁷. High drop out was multifactorial including financial, lack of family support or social support. High mortality and short life span may be due to vascular access related, inadequate dialysis, poor nutrition and infection.

Another study from Kochi, Kerala, India had similarity of patient's characteristic like cause of ESRD due to diabetes and twice weekly dialysis and mostly stated with temporary vascular access (80%) but little better outcomes as mean duration of dialysis > 37 months than our study¹⁸.

Death of dialysis patient similar as India (56% vs 51%). Survival time of hemodialysis was average 256 days which is lower than Indian study 40 months.

Limitation of our study was small study sample, we did not address all cause of poor outcomes but we have tried to find out premature discontinuation and find poor outcomes.

Conclusion:

In the study large numbers of patients leave dialysis due to financial or helping personal or social support within 3-4 months of dialysis initiation. An effective measure needed to prevent premature dropout. About half of hemodialysis patients died due to multiple risk factors within 8-9 months. Identification of risk factors for early mortality more important. Patient who are need of dialysis needs increase support from family, society and government level for better survival and quality of dialysis must be ensured.

Limitation of the Study:

The study was a hospital based and only a small number of respondents were taken. Patients from all socioeconomic status and all parts of the country did not come to seek medical attention in the study place. Due to financial constrain much of the tests was not possible to cross check the results of serological findings for acute precision and accuracy. It will be more authentic if this study can be done on a large population group in more institutions with longer duration of study.

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Declaration of interest:

The authors report no conflict of interest.

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Ethical consideration:

The study was conducted after approval from the ethical review committee. The confidentiality and anonymity of the study participants were maintained.

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