

## PRE DIALYSIS CARE OF CHRONIC KIDNEY DISEASE PATIENTS AFFECTS MORTALITY OF THE DIALYSIS PATIENTS.

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### Abstract:

**Introduction:** The pre dialysis care affects mortality of the dialysis patients. So this study was conducted to determine the pre dialysis care and its effects on the mortality of the dialysis patients.

**Materials and methods:** All patients who presented in nephrology out patients department and had indications for dialysis were included in study. Patients who refused dialysis, with acute kidney failure were excluded from the study. Pro forma was designed for demographic (age, sex, education, and income), clinical (vital signs, volume status) and laboratory data (hemoglobin, urea, creatinine, albumin, bicarbonate etc.) of all the patients. Patients were asked about details of chronic kidney disease diagnosis and management. They were inquired about dialysis, access knowledge and management of CKD complications on preformed questionnaire Pro forma. Patients who agreed for dialysis, were put on dialysis or offered to initiate dialysis at their nearby residence. Patients were followed up on one, three, six, and twelve months for outcomes like still on dialysis, died or lost to follow up.

**Results:** One hundred and seventy six patients were enrolled in the study and were followed up to one year. In this study, male & female were almost equal and most of them 89 (50.6%) were middle aged. Major causes of end stage renal disease (ESRD) were Hypertension 89 (50.6%) and Diabetes Mellitus 80 (45.5%). Only small number of patients 2 (1.1%) were under care of nephrologist when they were diagnosed of CKD while rest of the patients were getting treatment from non-renal physicians like urologists, medical specialists and general practitioners. Majority of the patients 172 (97.7 %) had visited nephrologist just before the start of dialysis and they were informed about the need of dialysis at very late stage. Most of the patients 155 (88.1%) were anemic (Hb < 11 G/dL) and large number of patients 67 (38.1%) were on blood transfusions for anemia treatment. Dialysis was initiated through temporary catheter in 155 (88.1%) patients. Overall mortality was 78 (55.3 %) after a year and maximum 58 (40.1%) was in initial three months.

**Conclusion:** This study shows that majority of the patients were not getting pre-dialysis care according to international guidelines. These patients were being managed by nonrenal physicians. Poor quality of pre dialysis care leads to high mortality of the dialysis patients.

**Key words:** *Pre-dialysis care. Access. Hypoalbuminemia. Hemodialysis. Nephrologist.*

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## INTRODUCTION

Treatment of CKD includes retarding CKD progression, timely management of its complications and preparing patients for renal replacement therapy (RRT), all are important pillars of Pre-dialysis care.<sup>1, 2, 3</sup> Life style modifications, good control of blood pressure and serum glucose, use of angiotensin-converting enzyme inhibitors and/or angiotensin receptor blockers, lipid-lowering drugs are included in pre-dialysis

care on one side while on other side management of anemia and mineral bone disorder improves quality of life.<sup>2,3</sup> Pre dialysis care is an important aspect of CKD patients as it decreases the ESRD incidence and mortality in the first year of dialysis. It also improves the clinical outcome of CKD patients in both pre dialysis and post dialysis periods. It is associated with shorter hospitalization stay, a high rate of elective reconstruction of AV fistula and availability of the alternative dialysis modality. Pre dialysis care can preserve functioning nephrons and reduces cardiovascular morbidity and mortality of the dialysis patients on long term basis. In Pakistan basic health system is weak and nephrology services are in preliminary stage of development affecting high mortality of the dialysis patients as compared to developed countries. There is paucity of the data on the effect of pre dialysis care on morbidity and mortality of the dialysis patients. So, this study was conducted to determine the effect of pre dialysis care on mortality of the dialysis patients.

## **MATERIALS AND METHODS**

### **Study Design and Setting**

This retrospective-prospective study was conducted at Nephrology department of King Edward Medical University/ Mayo Hospital, Lahore from January 2014 to January 2016.

### **Data Collection**

All patients presented at nephrology out patients department (OPD) having indications of dialysis, were enrolled in the study. Patients with CKD who refused dialysis, acute kidney failure and lost to follow up were excluded from the study. History of the disease was taken and physical examination was done. Blood samples were drawn for routine hematological, biochemical and viral markers (HBs Ag and Anti HCV). Pro forma was designed for demographic (age, education, gender, marital status and monthly income), clinical and laboratory data. Kidney Diseases Improving Global Outcome (KDIGO) guidelines were followed for lab parameters.<sup>4</sup> Patients were asked about details of chronic kidney disease diagnosis and its management. They were inquired about the pre dialysis care including previous nephrologist opinion, counseling for the initiation of dialysis and permanent access placement. Patients were also asked about the management of anemia, blood transfusion, metabolic acidosis and treatment of bone disorders. Patients, who agreed for dialysis, were put on dialysis or offered to initiate dialysis at their nearby residence. Patients who were not having permanent access for dialysis, were dialyzed through temporary catheter. Patients were followed up in nephrology outpatient department on one, three, six, and twelve months for outcomes like still on dialysis or died. Patients were not included in the final analysis if they had lost to follow up before twelve months.

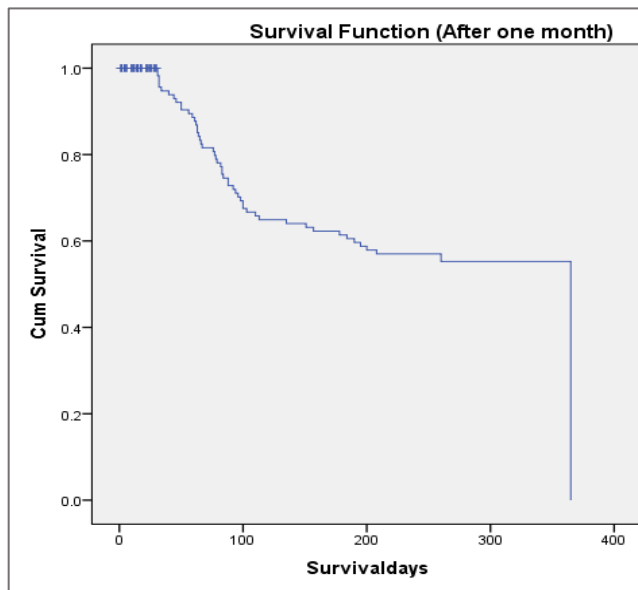
### **Statistical Analysis**

The data was entered and analyzed using SPSS -21. Continuous data was expressed in term of Mean  $\pm$  SD, whereas categorical data was expressed in frequencies. Kaplan-Meier curve was employed to display the survival of patients.

## **RESULTS**

Initially one hundred and seventy six (176) patients were enrolled in the study, out of which thirty five were excluded due to loss of follow up because patients could not be contacted. Mean age of the patients was  $44.70 \pm 15.25$  years and almost equal number of the patients were male 91 (51.7 %) and female 85 (48.2 %). Most of the patients were illiterate 101 (71.6 %) and eighty one (57.4%) belonged to poor socioeconomic status. Major cause of ESRD was Hypertension 89 (50.6%), followed by Diabetes Mellitus 80 (45.5%). One hundred and twenty two (69.3%) patients were managed by general physicians and internists for CKD while fifty one (29.6 %) were treated by traditional healers (Homeopathic, Herbal

or Spiritual). Only small number 2 (1.1%) were under the care of by renal physician at start of dialysis. Majority of the patients 172 (97.7 %) visited renal physicians just before start of dialysis and they 92 (52.5 %) were informed about the need of dialysis a very late stage i.e within one month. Majority of the patients 120 (66.2 %) were already advised about dialysis but they were not getting it up till now. Mean Hb was 8.47 gm/dL and majority of the patients 155 (88.1%) were anemic. Malnutrition (hypoalbuminemia) was evident in majority 164 (93.2%) of the patients. Blood transfusion was mode of treatment for anemia in sixty seven (38.1 %) patients. Erythropoietin (EPO) with proper dosing was used by only small number of patients 27 (15.3 %). Forty three (24.4 %) patients were having both blood transfusion and EPO for anemia correction. One hundred and fifty five patients (88.1%) had temporary access catheter while only 21 (11.9%) had permanent access. One year mortality was 78 (55.3 %) and maximum was in initial three months i.e. 58 (40.1%) as shown in Figure No 1-4.



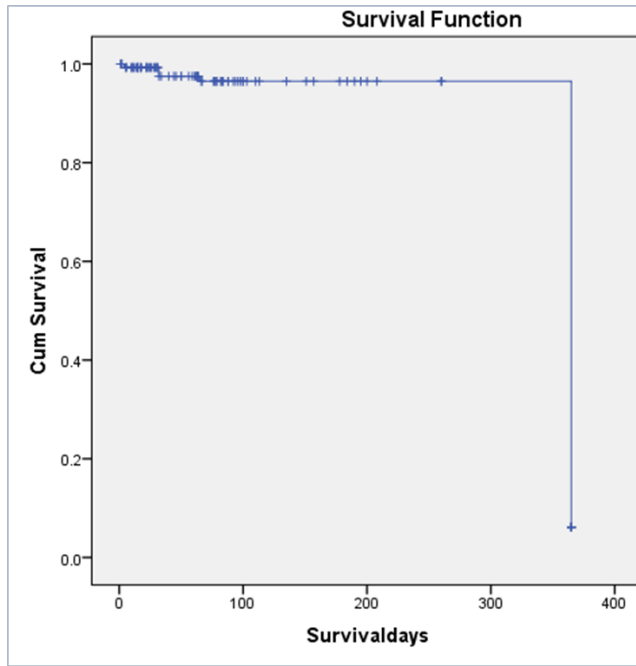
**Figure No. 1:** Survival curve at one month of Hemodialysis initiation.

## DISCUSSION

In our study, we found that poor pre dialysis care affects mortality of the dialysis patients. Almost all of the patients were being managed by general physicians and internists when they became aware of kidney disease. These patients presented to nephrologist just before the initiation of dialysis. In Pakistan, nephrology services are at preliminary stage. Most of the hospitals in the periphery don't have nephrology departments yet and only recently in the last three to four years that even the city of Lahore with a population of more than 10 million saw the establishment of nephrology services including ours. Although there is improvement in provision of nephrology services in the last couple of years at tertiary care hospitals of the Punjab, still the services provided in these hospitals are not up to the mark. According to a study conducted in these teaching hospitals, doctors working on medical floor have incomplete knowledge in managing these patients.<sup>5</sup>

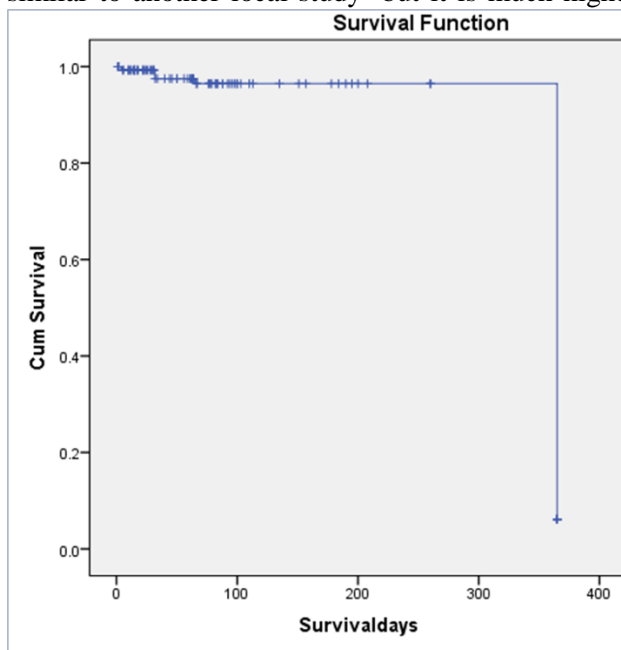
In Pakistan, basic health system is very weak and there is no proper referral system of the patients needing specialized care at General Physician's level. Patients are being managed by local doctors until and unless there is need for dialysis. KDIGO guidelines recommend patients with CKD should be referred to nephrologist when GFR is less than 30ml/min/1.73m<sup>2</sup>.<sup>4</sup> According to local research, there is hundred percent late referral of dialysis patients to nephrologist.<sup>6</sup> In this study large number of patients

were informed about CKD within three months of the disease. Majority of the patients with CKD were informed about dialysis within a month of dialysis initiation. Non availability and inaccessibility of proper nephrology services was very important hurdle in pre-dialysis CKD care to slow the progression of disease. Poor pre dialysis care was evident from high incidence of anemia, hypoalbuminemia and severe acidosis of the patients on first presentation to nephrologist.

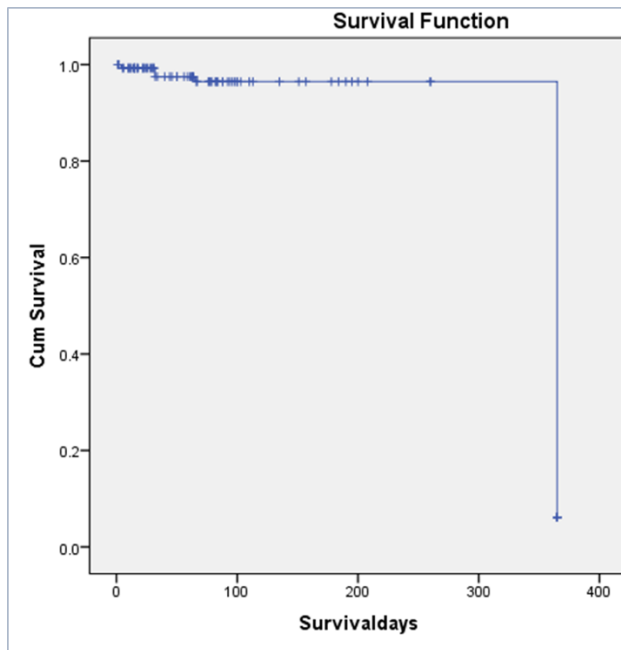


**FIGURE No.2:** Survival curve at three months of hemodialysis initiation.

In this study there is a very high mortality (55.3%) of the dialysis patients at one year which is almost similar to another local study<sup>7</sup> but it is much higher than developed countries like Japan 6.6%, Europe



**FIGURE NUMBER. 3:** Survival curve at six months of Hemodialysis initiation.



**FIGURE Number. 4:** Survival curve at twelve months of Hemodialysis initiation.

15.6% and the USA 21.7%.<sup>8</sup> In this study high mortality was seen in initial three months mostly due to access related infections as described in the literature.<sup>9,10</sup> There are multiple reasons for high mortality in these patients. One of the important reason is lack of early detection of CKD and prevention of its complications.<sup>11,12</sup> Such patients present without a vascular access for initiation of dialysis<sup>13-14</sup>

Another dilemma is the denial of need of dialysis and majority experiment with alternative treatment modalities; 29% in our study were treated with alternative medicine; and only presenting late in emergency for dialysis. Although dialysis services are provided free of cost in the public sector hospitals

of the Punjab but it cannot cater for the huge list of CKD patients. Being expensive treatment modality, most of the patients get inadequate dialysis like twice weekly; frequently missing also if self-paying; as compared to international guidelines recommending thrice weekly dialysis.<sup>7</sup> Thus inadequate dialysis in our opinion is a major cause of mortality.

Many of our patients were unaware or in denial about their disease and least bothered about fluid and diet restriction. Fluid overload and anemia is one of the important predictor of morbidity and mortality of the dialysis patients.<sup>15,16</sup> In our study, patients presented to nephrologist with a mean Hb of 8.47 g/dl and majority were not receiving Erythropoietin (EPO) and iron replacement. Even the minority of patients on EPO were not properly worked up for the causes of anemia and none of the patients were receiving oral or intravenous iron preparations. A major factor in anemia management in these patients was financial restraints and 38.1% were receiving blood transfusion for anemia correction as this is relatively cheaper and rapid method of correction of anemia.

## CONCLUSION

Our study highlights the fact that majority of the patients were not getting pre-dialysis CKD care according to international guidelines. These patients were in general, being managed by non-renal physicians most of the time. Poor quality of pre dialysis care is probably the reason for significantly high

mortality rate in our dialysis patients. Steps at all levels to ensure the proper diagnosis, timely referral to nephrologist and CKD care will decrease the number of patients progressing to dialysis as well as improving mortality in those progressing to dialysis.

### Conflict of interest

None declared

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