

Socioeconomic Impact of CKD

Introduction:

Chronic kidney disease (CKD) is a global health problem because of increasing incidence and prevalence, poor outcome, and high costs. Moreover, it is associated with poor quality of life and increased risk of death. The most common causes of CKD are diabetes and high blood pressure (hypertension). It is because of increasing incidence of these conditions that there has been an increase in number of cases of CKD.

In USA about 10% of the population is affected by CKD and the numbers continue to increase. There is no registry in India but if one were to translate the same statistics to our country, it would mean that 100 million people in India are affected by CKD. Patients in early stages of CKD if aggressively managed can be prevented from progressing to end stage kidney disease (ESKD). But beyond a certain stage CKD invariably progresses to ESKD. Once ESKD develops, treatment options are limited and include life-long dialysis or kidney transplantation. Both treatment options are prohibitively expensive. Availability of these options is also limited. Thus, only a small percentage of patients are fortunate to get treatment.

Cost involved in dialysis treatment:

1. Hemodialysis: The cost of hemodialysis treatment should be considered in 2 parts – direct cost and indirect cost.

The direct cost (table 1) includes:

- a) cost of hemodialysis procedure (about Rs. 12,000 per month),
- b) cost of medicines (about Rs. 10,000 per month) and
- c) cost of traveling to the dialysis unit 3 times a week (about Rs. 3000 per month).

The indirect cost includes:

- a) loss of income due to decreased working hours and in many cases decreased working capacity,
- b) decreased working hours of the accompanying person and
- c) increased hospitalization for various complications that a dialysis patient is prone to.

2. Peritoneal dialysis: The direct cost involved is similar to that of hemodialysis. For continuous ambulatory peritoneal dialysis (CAPD) the expense is about Rs. 25,000 per month. If automated peritoneal dialysis is used where dialysis is performed with the help of a machine which costs about Rs.4 lacs, the expense increases to about Rs. 40,000 per month. The indirect cost is also similar to that of hemodialysis.

For both forms of dialysis treatment, compromising the treatment to reduce the direct cost leads to an increase in indirect cost. For example, an attempt to reduce the frequency of hemodialysis to twice a week and in case of peritoneal dialysis an attempt to reduce the number of exchanges to 3 per day, increases the risk of cardiovascular disease(heart disease and stroke).

Cost involved in kidney transplant:

This involves cost of evaluating the recipient and the potential donor to assess their suitability for transplantation, cost of transplant procedure and cost of post transplant care (table 2).

a) Cost to determine suitability of patient and donor: To be able to perform kidney transplant, the patient should be thoroughly evaluated to assess his/her suitability for transplant. This will vary from patient to patient. If the patient is suitable, the next step is to identify a suitable donor. The potential donor has to be subjected to a battery of tests. The combined cost of evaluating the patient and his donor will be

approximately Rs. 50,000. In some cases this may be higher. For example an elderly diabetic may need cardiac evaluation which will include coronary angiography. As regards the donor, it may happen that after a detailed evaluation the donor may not prove to be suitable and another donor may have to be evaluated.

b) Cost of transplant operation (including stay in the hospital, operation of the patient and donor, medicines and various testing): This will approximate Rs. 250,000 for an uneventful course. If a complication develops, which happens in about 10% of the cases, the cost goes up depending on the nature of the complication.

c) Cost of care after transplant operation: After transplant, a periodic check up is required and medicines are required to prevent rejection of the new kidney. In the early period after transplant, the check up required is more frequent and the dose of medicines is high. Thus the cost will be high. This is on an average Rs. 15,000 per month for the first year. Then the cost progressively comes down. By 3 years the cost comes down to Rs. 5,000 per month and by 5 years it comes down to Rs. 3,000 per month. When there is a full match between the recipient and the donor the cost comes down substantially.

Availability of ESKD treatment in India:

While dialysis and transplant has contributed significantly to improving outcome of patients with ESKD, these options are available to only a small percentage of patients. This is because the cost of dialysis and transplant (as discussed above) is beyond the reach of most of the patients. Even if cost is not a factor, availability of dialysis and transplant which requires elaborate facilities is limited. These facilities are available only in urban areas. There are approximately 400 dialysis units in the country. A majority of them are in private sector. The Government sector cannot afford to provide maintenance hemodialysis. A maximum of 2% of patients can be subjected to maintenance hemodialysis. Only about 3000 to 4000 Patients (1% of those developing ESKD each year) are fortunate to go for kidney transplant.

Table 1. Direct cost of currently recommended hemodialysis treatment

HD - 3 times/week	Rs. 12,000
EPO (100u/kg/week)	Rs. 06,000
Other medicines (DM, BP, vit D, PO4 binders)	Rs. 04,000
Travel	Rs. 03,000
Total	Rs. 25,000

Table 2. Cost involved in kidney transplant

An initial expense for evaluation of recipient and donor	Rs.50,000
Transplant operation	Rs.250,000
Post transplant care	Rs.15,000/month for 1 st year
	Rs.10,000/month for 2 nd year
	Rs.5,000/month for 3 rd year
	Rs.3,000/month from 5 th year

Dr. Bharat Shah MD, DNB(Nephro)
 Consultant Nephrologist
 Lilavati Hospital, Mumbai
 Nanavati Hospital, Mumbai